# THE BUILDER

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"ARCHITECTURE" and "THE BRITISH ARCHITECT"

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## ARCHITECTURE, PRESENT AND FUTURE

THERE is an ever growing anxiety as to the present position of architecture, and that of the private practising architect in particular. The surface signs point to his extinction within no long space of time unless something prompt is done to admit him more fully into those spheres of building activity which still continue on a large scale. If we were to accept the signs as certain portents of the future, most would view the prospect with some dismay, and certainly with much regret, for architecture has progressed mainly through the work of free designers acting for free men.

We are inclined to think, however, that the signs which indicate the immediate trend point less certainly to the world of the future. We have just passed through a period of planned living, by means of which a great victory in arms was achieved. The conclusion that an even greater victory in peace can be achieved by similar means is a not unnatural one, and we must all admit that planning of some complexity, and on a wide scale, must be pursued until the pressure of the present emergency has been relaxed. But the temper of the Englishman is not likely to accept such regimentation as an inevitable price of existence throughout the limitless future which lies ahead. It is inconceivable to us that, whatever the political trend of the future and however long the emergency may last, there will not still remain in the English way of life a strong element of individualism seeking an outlet for private enterprise. If this be granted, then the day of the private architect is far from ended.

It is with this reservation that we commend to notice a letter from Mr. Ronald Bradbury which we print elsewhere in this issue, and which expresses admirably the situation facing the profession to-day. It is obvious that he views the prospects for private practice with grave concern, and in this he falls in line with more than one official architect, including the President of the R.I.B.A., in expressing sympathy with the private architect and seeking to retain his influence upon architecture. It is, indeed, pleasant to record the camaraderie which exists in these difficult times between two sections of the profession between whom, at one time, there was little love lost.

We feel that the present emergency, whether it be of long or short duration, is temporary in character, and that we should not base our plans too rigidly upon the assumption that socialisation in this country can be extended indefinitely. It would seem to us that a better approach to the subject would be to assume that the private architect will be in demand so soon as things return to something approaching the normal, and that his preservation from extinction in the present abnormal situation is now a matter of public concern.

It is quite clear that for some years public building will form the bulk of the country's programme, and that official architecture will increase rather than diminish. But there is a limit beyond which such expansion to meet a temporary condition ceases to be economic or efficient. A return to normal which found the country with few private architects and more official architects than would then be needed would be a disastrous state of affairs and one from which the architects, both private and official, would suffer together with the public they serve.

It would thus appear to be most desirable that the temporarily inactive private architects should be used to reinforce the public departments through the time of temporary difficulty. This is no new suggestion on our part, but is a *fait accompli* in the schools programme of one of the Home Counties, as is now well known. At the same time, a more general use of the private architect by local authorities in their post-war housing schemes might be made. Some authorities, acting on the suggestion of their Architects, have already followed this course as an alternative to the setting up of a vast departmental staff and premises to cope with a programme which must in due course slacken off.

There is no doubt that the R.I.B.A. is exerting its influence in directions such as this, and that some indication as to their successful pursuit of such a policy will be forthcoming in due course. We trust this may be soon as in the meantime many architects are passing through a period of acute anxiety, and some are already falling by the way.

The better feeling which exists between architects who earn their living by fees and those who earn it by salary suggests that some method of harmonious working together towards the common aims we all pursue is not beyond the realms of possibility. The mind of an architect, if he is to succeed, is bound to be flexible, and those who have not the genius for meeting an unusual situation cannot long survive the exacting demands of practice.

Mr. Bradbury also refers to the trend towards committee control as distinct from personal control. This is no new experience, even in the commercial world, for the average private architect will not be dismayed by the fact that the times impose more of this than he would freely choose. But we feel that it would be wrong to assume that all the architecture of the future will arise only out of similar conditions, for the client, as a man, counts for much in the advancement of fine architecture.

For the present we will say no more upon the subject than again to stress the urgency of the situation and the unfortunate results which will follow neglect of a remedy.

The profession is well and efficiently manned, and the building tasks ahead mount up into a towering pyramid. Let us be sure that we use our resources to the best advantage.

# NOTES AND NEWS

## War Memorials.

THE exhibition of drawings for the Liverpool Memorial Competition was disappointing, for of the 88 schemes submitted, only about eight sets of drawings were put on show. This was a pity, for it is difficult to believe that only this small number was worth exhibiting, and there was obviously the space available for a bigger show. The case for and against this type of memorial has, in the past, frequently been the subject of debate. To-day such symbolism commands little respect from the modern type of designer. The esplanades and coastal roads of many seaside ports and towns are dotted with this type of memorial, and although the fine sentiment which designed and built them cannot possibly be doubted, as isolated pieces of design they just do not impress in the way they are meant to do, because the very nature of their "insular" type of design does not form a cohesive whole with normal surroundings. It may be argued that with many sites the surrounding buildings are hardly worth considering, but even this scarcely warrants investing a comparatively small feature with a somewhat ponderous scale.

This subject is one where the æsthetic approach is all-important, though in the past it has often been relegated in favour of the "civic" approach.

## United Nations Headquarters.

WHETHER one regards the design for the Permanent Headquarters of the United Nations as "a completely workmanlike job," or as "a super-crate, to ship a fiasco to hell" (*vide* Mr. Howard Robertson's address at the R.I.B.A.—*The Builder*, March 12), one must admire the Americans for the way they are getting to work on this great scheme of buildings. Already the site is almost completely cleared, detailed drawings started and cost estimates checked in preparation for "contract bidding" by July 1. These facts and many others are given in a "Short Summary" of the scheme just issued by the London Information Centre of the United Nations from Russell-square House, W.C.1. A comprehensive idea of the whole scheme of buildings is given by means of a site plan and diagrammatic plans at different levels, together with brief notes. The scheme is estimated to cost $65,000,000, and in addition the City of New York has made contributions amounting to $23,485,000 on account of temporary headquarters, land, water rights and easements, and improvements adjacent to the site. If only the nations could settle their differences with the speed and smoothness with which the Americans are getting on with these great buildings!

## Westminster Precinct.

IT will be recalled that one of the features of the Abercrombie-Forshaw County of London Plan was the forming of the historic heart of Westminster into a "precinct"—an area bounded by Great George-street on the north, Horseferry-road on the south, the river on the east, and Broadway and Strutton Ground on the west. This would have involved the closing of Parliament-square to vehicular traffic and the creation of a new crescent-shaped road, chiefly by widenings, from Storey's-gate to Horseferry-road, linking at its centre with the western part of Victoria-street by means of a roundabout. The official plan for Westminster, by Messrs. Rawlinson and Davidge (reviewed in our issue for February 13), embodies the new crescent road but retains Parliament-square in an enlarged form, so it is clear that the "precinct" idea is not officially approved.

This is perhaps to be regretted, for it would have had many attractions if it could have been put into effect. Some of the possibilities are explored in a scheme which has been prepared by "The Architectural Review." By plan, drawing, photograph and letterpress we are shown how this historic area, which includes the Houses of Parliament, the Abbey, Westminster School, Broad Sanctuary, Dean's Yard, Smith-square and many quiet old streets as well as busy modern ones could be turned largely into a haven of peace for pedestrians, with green lawns, paved courtyards and trees. Service roads to the business and residential parts of the "precinct" would be retained. Certain new amenities are proposed, such as a café in what is now Parliament-square, a "restaurant-pub" on the site of Abingdon-street, and a new row of houses on the river front to be used as chambers for M.P.s, with a small harbour and quay between these and the Victoria Tower. All very charming but, we fear, unlikely to be realised.

## Architecture and the Cinema.

THE Exhibition of British Art at the Victoria and Albert Museum is a feast of fine draughtsmanship. The comparatively young art of designing for films has passed through many phases since the early days of the biograph; it has expanded in scope and technique, and many men, trained as architects, have found their way into the ranks of set designers, their training helping to make what was once a slightly divided form of artistic expression an extraordinarily vital and important art form. The keynote of the exhibition is obviously architecture—architecture in all its diversity, including the well-known sets by Walter Reimann for "The Cabinet of Dr. Caligari," that 1918 classic of German film art. Here naturalism was cast aside, perspective was visually distorted to increase the dramatic value of the theme, and although the film (the world as seen through the eyes of a madman!) created no precedent, its immediate followers, "The Student of Prague" and "Warning Shadows," with their cleverly designed sets, probably laid the foundations of film scenic art as we know it to-day.

The film designer to-day must necessarily be more than just an artist with the various styles of architecture at his finger tips. He must acquire a first-rate knowledge of film-making, and must be something of a film director and technician into the bargain. He is called upon to produce drawings to express the emotional context and atmosphere of the film, and to be a guide to those making it. Later he must illustrate the film in motion by introducing the third dimension, which calls for clever architectural planning. Some good models of these sets are on view, and demonstrations of devices used to obtain grandeur of scale are given. Drawings by the leading British designers are well chosen and include the work of Edward Garrick, Laurence Irving and Cedric Dawe.

While it is not architecture in the general sense of the term, architectural suggestion remains a peculiar art, and cannot be (if it is to be successful) entirely divorced from reality.

## Architects and 1951.

THE year 1951 is rapidly assuming increasing importance in the minds of architects and designers. In this age of revived music-consciousness it would seem that the first necessity for a successful festival would be the building of a good concert hall. We tend to study with energy the impressive examples of concert hall architecture recently built in Sweden and Denmark; to compare these buildings, which do not appear to be constructed of over-expensive materials, with General Scott's Royal Albert Hall (a fine building of its class and time, be it said) immediately indicates the urgent need for a really up-to-date building of this kind. Here, indeed, would be an excellent subject for an architectural competition.

## International Union of Architects.

THE Royal Institute of British Architects has accepted responsibility for the British Section of the International Union of Architects, the first Congress of which will be held at Lausanne from June 28 to July 1.

As accommodation in Lausanne is extremely limited, architects wishing to attend should first apply in writing to the Secretary, R.I.B.A., when further details will be sent. It is advisable that application should be made immediately. The Congress will be followed by a series of excursions in Switzerland, covering Geneva, Berne, Zurich and Basle, from July 2 to July 10, inclusive.

## R.I.B.A. Librarianship.

MR. R. E. ENTHOVEN, F.R.I.B.A., has tendered to the Council of the Royal Institute his resignation from the post of Librarian. The Council have accepted his resignation with sincere regret, and Mr. Enthoven will terminate his appointment on May 31.

The Council of the Royal Institute of British Architects invite applications for the full-time appointment of Librarian to the Institute. The primary requirement is a knowledge of architecture. Experience of library administration will also be considered an advantage. Applicants must be aged between 30 and 45. A minimum salary of £750, rising by annual increments of £25 to £1,000, less superannuation contributions of 5 per cent., is offered. Forms of application and further particulars may be obtained from the Secretary, R.I.B.A., 66, Portland-place, W.1. Applications must be submitted not later than April 10.

## Building and the Future.

THE value of an education which associated the academic with the practical was

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emphasised by the Rt. Hon. George Tomlinson, M.P., Minister of Education, when he distributed prizes to students of the Hammersmith School of Building and Arts and Crafts at Hammersmith Town Hall on Monday evening. Mr. Tomlinson congratulated the school on its post-war achievements and, referring to the yearly report which had been read by the principal, Mr. H. W. Mole, F.R.I.B.A., M.I.Struct.E., said that he was pleased to hear that the school did not restrict its education to practical subjects but also gave a general education. In his opinion education was of economic value and also enabled a person to form his own interpretation of life, but it was not enough for a man to have knowledge unless he used it in the service of others. In a school such as theirs, he told the students, they could find in their work both personal satisfaction and the opportunity of pleasing others.

He went on to refer to the assumption prevalent in the past that education was for only one class of people. If one assumed that as a consequence of scientific progress more automatons would be needed in industry, then it was all the more important that the individual who was doing the tedious job should have the chance of developing his education in order that life should be tolerable for him.

**Education's Place in the Community.**

EVIDENCE of the increased desire for the benefits of education was given by the Minister when he compared the pre-war figure of 40,000 evening class students with to-day's figure of 140,000. He was glad that many building employers insisted on their apprentices attending evening school although he did feel that the student should have the opportunity of attending day school once a week when his mind was not tired after a day's work. He hoped that a compulsory move would be made to achieve such an opportunity in the future.

To all employers who had demonstrated the value of education in their own particular industry Mr. Tomlinson extended his thanks. To the students he gave a reminder that a well-stocked mind was the antidote to a desire for such pastimes as dog-racing and football pools. To the parents he gave a paradoxical piece of advice. In these times of shortage of man-power, he said, they should keep their child at school for twelve months after official school-leaving age; by so doing they would be preparing a better worker both from the physical and economic point of view. Nothing, he claimed, could make a greater contribution to the country's future position than the furthering of education.

## FROM "THE BUILDER" OF 1848

*Saturday, March* 18, 1848

QUICK WORK AT DRURY-LANE THEATRE. The transformation of our national theatre into a circus for French horse-riders was effected with much skill, under the direction of a practised architect in these matters, in a singularly short time. The pit has been covered over to the level of the stage, and a circle formed, partly on the stage, partly over the pit, while the rest of the stage, to a considerable extent backwards, is occupied by rising seats sufficient to contain a large audience, and an orchestra is constructed high up at the back, from under which the performers, bipeds and quadrupeds, enter the arena. The front of the dress-circle, against which the last row of spectators in the pit necessarily lean, is boarded up and covered with red cloth. Shoring to a considerable extent was, of course, required, under both stage and pit, yet the whole of the work was accomplished in the short space of *five days*, by Messrs. Soward and Son, of Tottenham Court-road. In cases of this sort, the architect is wholly in the hands of the builder: the main thing he has to do, after having arranged his plans, or rather *not* to do, is not to change his mind. Those who carry out his plans with energy deserve praise.

**SCULPTURE AT THE NATIONAL SOCIETY'S ANNUAL EXHIBITION, R.B.A. GALLERIES, S.W.**

*Above:* **"Judas the Informer"—Bronze. By Barney Seale, F.R.B.S., R.B.A.**

*Left:* **"The Beggar"—Carving in Limewood. By Frederick Mancini, A.R.B.S.**

# EXETER CATHEDRAL

## REPAIR OF WAR DAMAGE

By H. M. R. DRURY, F.R.I.B.A.

(Surveyor to the Dean and Chapter.)

EXETER CATHEDRAL was severely damaged in the raid on the night of May 3-4, 1942. A direct hit was received on St. James's Chapel on the south side of the choir, which totally destroyed the chapel, consisting of a muniment room over and a crypt below, housing the organ-blowing apparatus, the two flying buttresses flanking the chapel, the lower stages of which formed part of the walls of the chapel, and three bays of the south choir aisle. In addition, extensive damage was done to the choir, and to the timber vaulting of the north and south transepts. In the choir large pieces of masonry were blown out of the piers and arcades, the pulpit was totally destroyed, and the stalls and the very fine mediæval oak screens were badly damaged. The Cathedral was without light or power, as the high-tension electricity transformer which stood beside St. James's Chapel was destroyed. To complete the tale of destruction, not a single window in the Cathedral escaped damage. The portion shown shaded on the plan (Fig. 1) shows the portion of the Cathedral that was totally destroyed.

So far as the safety of the fabric was concerned, the most serious damage was the destruction of the two flying buttresses, which endangered the main vault of the choir. It was necessary to carry out immediate first-aid repairs, and in my absence on military service, Mr. W. Godfrey Allen, M.A., F.R.I.B.A., Surveyor to the Fabric of St. Paul's Cathedral, was called in. The first work undertaken was to instal two built-up light steel ties spanning the choir from north to south on the line of the two destroyed buttresses, thus tying in the south wall and preventing it from being pushed out by the thrust of the vault. It was obvious, however, that this could only be regarded as a temporary measure, and that it would be necessary to rebuild the buttresses as quickly as circumstances would permit. The first intention was to rebuild them in a temporary manner in brick, and drawings were prepared for this, but it was found that the cost was so high that it was not worth the expense for the limited time they would stand, and it was eventually decided that rebuilding must be in permanent form in stone. Messrs. Dart and Francis, of Crediton, Devon, were appointed contractors for the work, and Mr. Francis has given unsparingly of his personal time in the direction of the work; by special arrangement the Cathedral's own building staff were loaned to them for this purpose, an arrangement which has worked very happily. Mr. J. A. N. Gibson was in charge of the work locally as Clerk of the Works up to the time of his retirement in December, 1946, and Mr. George Down, the Cathedral's foreman mason, has acted as foreman throughout.

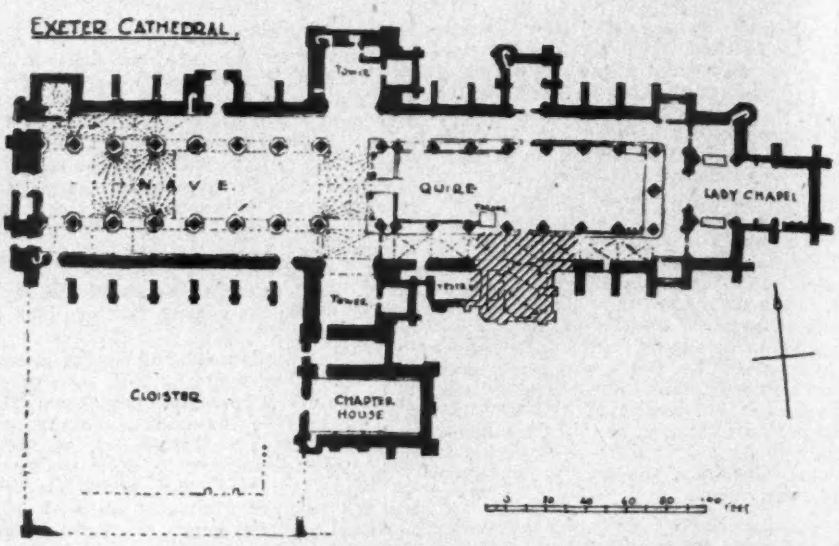



**Fig. 1.—Plan of Cathedral. The hatched portion represents the portion now under repair.**

The author returned in September, 1945, and has since that date worked in collaboration with Mr. Godfrey Allen and his colleague Mr. J. G. P. Meaden, F.S.A. The work has made steady progress, until by now the two flying buttresses are complete, and work is proceeding on St. James's Chapel and the three bays of the south choir aisle. A view of the chapel taken after the rubble had been cleared away, but before any rebuilding was done, is shown in Fig. 2. Fig. 3, taken on March 21, 1945, shows the work up to the level of the springing of the vaulting of St. James's Chapel, and Fig. 4 on March 7, 1946, up to the springing of the vaulting of the muniment

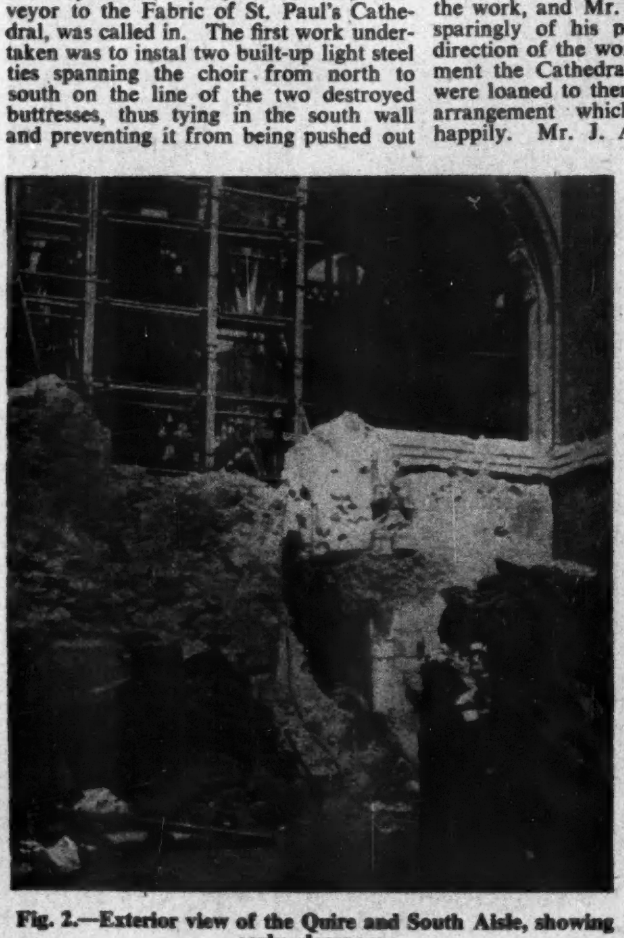


**Fig. 2.—Exterior view of the Quire and South Aisle, showing early clearance.**

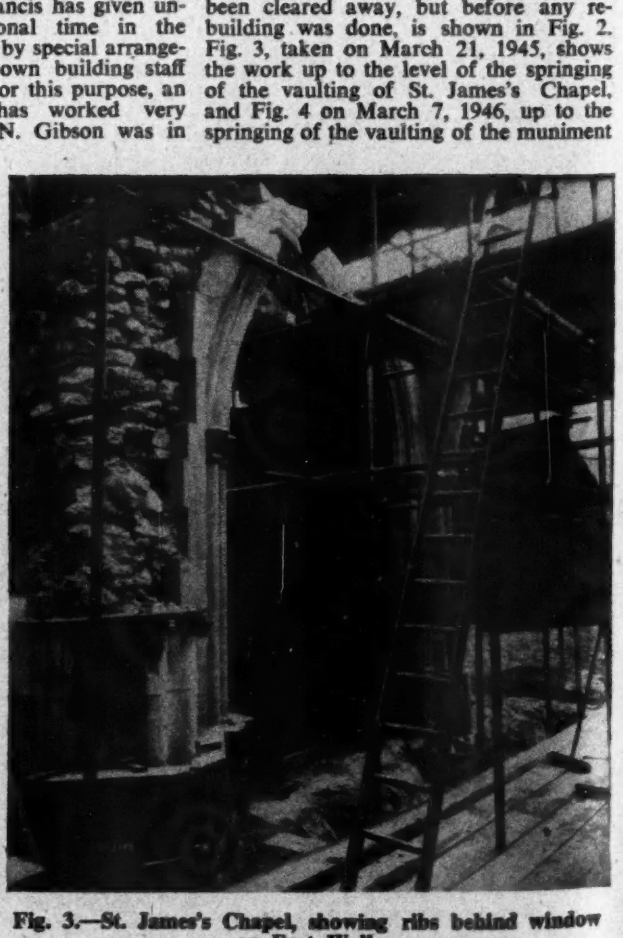


**Fig. 3.—St. James's Chapel, showing ribs behind window on East Wall.**

Fig. 5.—Flying buttresses just completed, with centering still in position.

Fig. 6.—A general view of the work from the South.

room, showing a portion of the destroyed vault of the south choir aisle beyond. Fig. 5 is a view of the first flying buttress to be completed, showing the centering still in position, taken on December 4, 1946. Fig. 6 is a general view, showing how the buttresses are incorporated in, and form part of the walling of St. James's Chapel. The exposed rubble is due to the fact that in the first instance permission was given only to rebuild so much of St. James's Chapel as was necessary to complete the buttresses. Permission to rebuild the whole chapel came at a later date. Fig. 7 shows the completed buttresses with the scaffolding in position for erecting the pinnacle on one of them; both these photographs were taken on May 15 last. Fig. 8 is a photograph of one of the windows in the south choir aisle, which has only just been completed.

The programme for the future is to complete the vaulting of the south choir aisle as quickly as possible, so as to restore equilibrium, after which the two steel ties spanning the choir will be removed. St. James's Chapel can thus be screened off and the work completed without interfering with the normal functions of the Cathedral.

While these major building operations have been in hand, many other works towards repair of war damage at the Cathedral have progressed. The vaulting in the north and south transepts has been restored. Messrs. Harrison and Harrison, of Durham, have rebuilt the organ. Mr. Herbert Read has repaired the choir stalls, and is now engaged on rebuilding the oak screens from the innumerable fragments into which they were blown.* Mr. Roseveare, of the firm of Messrs. F. Drake and Sons, is repairing the ancient glass, and one window is already back in position. Messrs. J. Wippell and Co., of Exeter and London, are re-glazing the nave clerestory windows.

Much yet remains to be done; the very delicate stone sedilia and some of the stone screens have to be repaired. Those monuments which are of artistic value or historical interest have to be reassembled from the fragments which have been salvaged. A new electric lighting installation is a matter which must receive attention as soon as conditions permit; the present lighting arrangements in the cathedral are only temporary. The loudspeaker installation and the heating arrangements are other matters requiring attention.

Equally serious and, indeed, a matter for grave concern is the maintenance work which has perforce been deferred for years while the building staff concentrated all their efforts on preserving the safety of the fabric. The leadwork of the roofs and gutters calls for much repair, the effects of time are telling heavily on pinnacles and parapets, and deposits of soot with their harmful action on masonry increase alarmingly. A start was made last summer with some of the most urgent of this work, the roofs and gutters in particular receiving attention, and steeplejacks examined the pinnacles and lightning conductors and secured any that were loose with non-ferrous metal cramps. But funds are badly needed for this and other essential work not covered

Fig. 4.—The Muniment Room over St. James's Chapel showing vaulting springers in position.

* An article on Mr. Read's work appeared in *The Builder* for April 11, 1947.

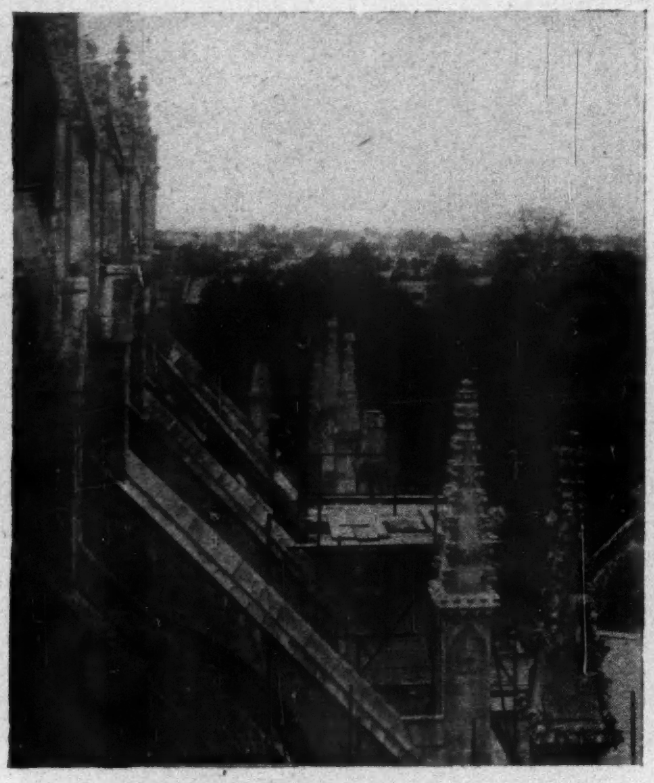


**Fig. 7.—Work on the flying buttresses has progressed to a stage where the crocketted finials are now replaced.**

**Fig. 8.—The tracery of the window in the South Choir Aisle is the latest work to be completed.**

by war damage. To meet these needs the Dean and Chapter have launched an appeal for £75,000, and subscriptions would be most gratefully received by the Treasurer to the fund, Major W. L. Sparkes, The Chapter Clerk's Office, The Close, Exeter.

## COMING EVENTS

**Friday, March 19.**

BIRMINGHAM AND FIVE COUNTIES ARCHITECTURAL ASSOCIATION.—Professor A. E. Richardson, R.A., on "London." Royal Birmingham Society of Artists Galleries, New-street. 6.15 p.m.

**Monday, March 22.**

THE ROYAL INSTITUTION OF CHARTERED SURVEYORS.—Junior organisation meeting. 12, Great George-street. 6 p.m.

**Tuesday, March 23.**

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Architectural Science Board Lecture, "Air Hygiene," by Dr. T. Bedford, of the Medical Research Council. R.I.B.A., 66, Portland-place, W.1. 6 p.m.

THE INSTITUTION OF SANITARY ENGINEERS.—"Small-Scale Sewage Disposal," by Mr. Donald Easdale, followed by discussion. 118, Victoria-street, S.W.1. 6 p.m.

THE HOUSING CENTRE.—"Rent Control," by Mr. Conyers Bridgewater, M.A. 13, Suffolk-street, S.W.1. 1.15 p.m.

FEDERATION OF MASTER BUILDERS (Islington Area).—Presentation of prizes to students at the Northern Polytechnic, London, N.1. 3 p.m.

METROPOLITAN PUBLIC GARDENS ASSOCIATION.—Reception, 23, Knightsbridge, S.W.1. 4.30 p.m.

**Wednesday, March 24.**

ARCHITECTURAL ASSOCIATION.—"Public and Private Architecture," by Mr. A. Cox, A.R.I.B.A., A.A.Dip.(Hons.). 36, Bedford-square, W.C.1. 7.45 p.m.

**Thursday, March 25.**

THE INSTITUTION OF STRUCTURAL ENGINEERS.—"The Torsional Constants of Structural Steel Sections," by Professor W. Fisher Cassie, Ph.D., F.R.S.E., and Mr. W. B. Dobie, M.Sc. 11, Upper Belgrave-street, S.W.1. 5.55 p.m.

# THE STATE OF THE ARCHITECTURAL PROFESSION

**By RONALD BRADBURY, Ph.D., F.R.I.B.A.**

ARCHITECTS naturally devote the major part of their enthusiasm and interest to the "bricks and mortar" side of their career and only occasionally stop to think about their profession as an entity in relation to contemporary society. There is, however, an element of grave danger in the ostrich attitude, especially in a time such as the present when sweeping social changes are in the air. If, as a profession, we bury our heads for too long a period in the sands of technique, we may find when we raise them that our position in society is in serious jeopardy.

It is gratifying to learn, therefore, from *The Builder* of February 27 that the leaders of the profession are alive to at least one aspect of the present situation and that Sir Lancelot Keay, President of the R.I.B.A., has been making representations to the Government on behalf of one section of the profession. This is all to the good, but I believe, in the words of a current popular song, that "Now is the hour" for a much wider survey of present and future prospects; a full-dress inquiry into the "State of the Profession" is urgently needed. The twentieth century, whether we like it or not, is becoming increasingly "the Century of the Common Man," as exemplified by the whole trend of evolutionary social changes. Recent legislation and further Acts of Parliament now at the Committee stage will accelerate the already definite change of emphasis in favour of the needs of the community rather than of the individual. To-day the People are the Clients. Thus, a whole series of new factors has emerged in contemporary society which will affect vitally the place and prospects of the profession in the years that lie ahead, and it is plainly evident that, if it is to survive and develop, the profession must reorientate its outlook, modify certain of its ideas and adapt itself to these changed circumstances.

Social progress is generally gradual, and when studied in relation to a given point of time or in relation only to a small span of years it is sometimes imperceptible. There are, however, periodic phases in history when the various and apparently unconnected impulses in the fabric of society begin to fuse together into a single new trend. Surely we are now at such a stage, and if we look back over the years to the end of the first World War we shall be able to distinguish, at least in broad terms, the general directional flow of the factors which are likely to affect the well-being of our profession and our art.

I have no intention of trying to do the work which such a full-dress inquiry ought to undertake, and I will content myself, therefore, with indicating in broad terms only a few of the factors which influence me in suggesting that a thorough examination of the present position is so desirable.

There are four main elements in the machinery of the physical development of our country. They are (a) the jobs to be done, (b) the clients who order and pay for them, (c) the architects who design the buildings required, and (d) the building industry which puts them up. Put another way as a pseudo-mathematical equation:—

JOBS + CLIENTS (Architectural Profession + Building Industry) = ARCHITECTURE.

For the sake of the equation, the two sides of which are thus equivalent to "Cause" and "Effect," I am assuming that the architects involved are capable of designing buildings worthy to be called architecture. The two factors within the brackets are what I crudely call, for want of a better term, the

"bricks and mortar" side of the profession and, as I have already indicated, comprise the aspect to which we already devote so much of our attention. It is the first two factors, "the Jobs + the Clients" part of the equation, with which I particularly wish to deal because, as I shall try to show, there have been radical changes not only in the character of each during recent decades but also in the relationship between them.

It is obvious that architecture can only flourish if there are jobs to be done and clients to order them. It is important, I suggest, that the profession should have a clear grasp of what it may expect to be asked to do and who will form its clientele. Moreover, the eventual results produced by the "bricks and mortar" side will obviously be affected by the other two factors. To get a clear picture of the present position, however, it is necessary to dig back a little into the past so that the way in which existing conditions have developed may be studied in order that the implications of those conditions may be more fully appreciated.

The Industrial Revolution brought with it a widening scope for the activities of the architectural profession, and industrial society now demands an almost endless variety of building types, each offering different degrees of opportunity for their architects. Yet, whilst the scope of the jobs to be done has increased enormously, the industrial system has also introduced many novel features which affect our profession in several different ways. For instance, take the client-to-architect relationship. Not so very long ago it was nearly always on a man-to-man basis. The day of the "committee" had not yet dawned. The men who ordered jobs were usually the owners of the concern, and even where small groups of men were the clients, they were usually partners or directly interested in some very definite way with the project proposed. The impersonal, often soulless, elected committee as we know it to-day only emerged when the organisations became big as mergers took place between companies and as boards of directors were elected. Moreover, as industrial organisations spread their interests up and down the country the phenomena of architecture by "remote control" came into being: the London office handed out the jobs, and often the men who ordered them never saw the jobs until long after they were finished, if at all. "Architecture by Committee" and "Architecture by Remote Control" are thus both novel factors. The various Companies Acts have introduced elements into the practice of our art equal in their effect upon us as that, say, which printing had upon the outlook of mankind when it was first introduced.

Finally, the various organisations became so big with so much building work to do that a new personality was introduced into the architectural field, namely, the "official architect," employed by the firm as one of its staff to design and supervise all their building projects. Although I have mentioned only the industrial concerns so far, the same pattern of growth can be paralleled, more or less exactly, in both Local and National Government affairs, with the result that official architects now constitute a by no means negligible proportion of the qualified architects practising in this country, and recent legislation will undoubtedly add substantially to their number. Indeed, without being alarmist about the position, it is evident that, if the present trend continues at the same rate over the next twenty-five years as it has done since the early nineteen-twenties, official architects may well form the majority in the profession. It is no use blinking at facts, no matter how much one may dislike them, and it is obvious that the present trend is towards bigger organisations with more and more staff architects of their own. A glance at the advertisements in the technical journals will corroborate this statement.

Thus, to summarise so far. In an increasing number of cases the technique of consultation between client and architect is becoming much less personal through the introduction of democratically elected committees. Moreover, there is a tendency for the organisations requiring buildings to become bigger by normal growth or amalgamations and at some stage of their growth most of them decide to appoint official architects to their staff. As examples of this, consider the larger local authorities, the nationalised industries, and the big industrial and commercial concerns.

But there is another factor which must be taken into account which results directly from the fact that the People are the Clients. Public money is being used more and more for building enterprises, and it naturally follows that increased Government control is an inevitable corollary. Thus, where public money is involved, the Government now exerts direct control over a great deal of architectural work. The Government, however, also exercises in addition a considerable amount of indirect control over the expenditure of private money on building projects, not only through licensing machinery but also in the production of materials and components. In the present economic position of the country luxury building is "out," and it would be an optimist who would predict its unfettered return within, say, the next few years. Luxury work, however, normally provides the architectural profession with the most fruitful fields for experiment and the testing out of new ideas, and consequently some slowing down of the rate of the advancement of architecture as an art may be anticipated.

For the moment, at least, all architectural projects fall into two groups, priority and non-priority, and as a matter of interest I give below a table showing in a generalised way the likely scope for private and official architects in the next few years. The symbols used can be explained as follows:—

P —Jobs normally undertaken by firms of private architects.

P (O) —Jobs normally undertaken by private firms through their own official architects.

O —Jobs normally undertaken by the official architects of the Government or local authorities.

$\frac{O}{P}$ —Jobs undertaken by private architects under the general control of official architects.

| | |
|---|---|
| PRIORITY GROUPS. | |
| Municipal Housing | O |
| Private Enterprise Housing (under Licence) | P or P(O) |
| Industrial Buildings— | |
| (*a*) Trading Estates | $\frac{O}{P}$ or P |
| (*b*) Private Developments | P or P(O) |
| New Towns | O or $\frac{O}{P}$ |
| Government Buildings (for Services and Civil departments) | O |
| Hospitals | O or $\frac{O}{P}$ |
| Public Utilities and Nationalised Industries | O |
| Educational Buildings | O or $\frac{O}{P}$ |
| Special Commercial Buildings (regarded as of economic importance) | P or P(O) |
| "NON-PRIORITY GROUPS. | |
| Amusement and Recreational— | |
| (*a*) Municipal | O |
| (*b*) Private Developments | P or P(O) |
| Churches and other Religious Buildings (in Priority Group only so far as temporary buildings are concerned) | P |

I trust that my remarks upon the implications of the present situation, incomplete and sketchy as they are, will assist in drawing additional attention to some of the new aspects of the position in which our profession stands to-day. Architecture is a social art. It exists to serve the society of its time. The customer may not always be right but, after all, he pays the fees. If the architectural profession is to thrive, it must readjust its attitude of mind and modes of procedure to fit in with the clients' wishes. Is the architectural profession to-day so arranged and armed as to make the most of every opportunity offered to it? That is the vital question.

# CORRESPONDENCE

## National Amenities Council.

TO THE EDITOR OF *The Builder*.

SIR,—In your issue of March 12 Mr. John Swarbrick calls attention to a letter from the late Sir Charles Reilly advocating the formation of "A National Amenities Council," which appeared in *The Times* as long ago as May 13, 1946.

The fact that nothing tangible has come from the proposal after nearly two years points to the conclusion that this new body, whilst it might satisfy the whims of a few, is not wanted by the great majority of those who are sincerely interested in maintaining and establishing such amenities as the changing conditions and prevailing austerity permit.

When the Royal Institute of British Architects was invited to support the formation of this new Council, there was no evidence that any support was likely to be forthcoming from any of those bodies which usually collaborate with the Institute on matters of general interest.

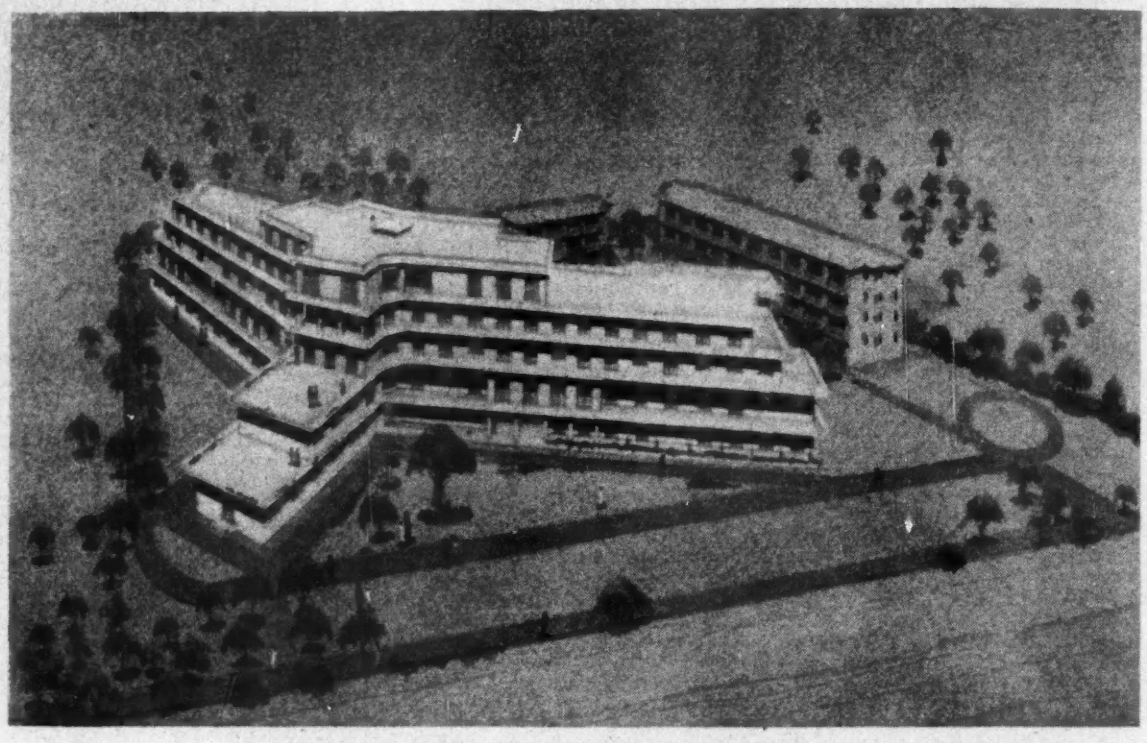
At a time when it is so essential to speak with authority and unanimity the setting up of subsidiary and redundant organisations is to be deprecated.

LANCELOT KEAY,
President, Royal Institute of British Architects.

66, Portland-place, W.1.

## Wortham Smock Mill.

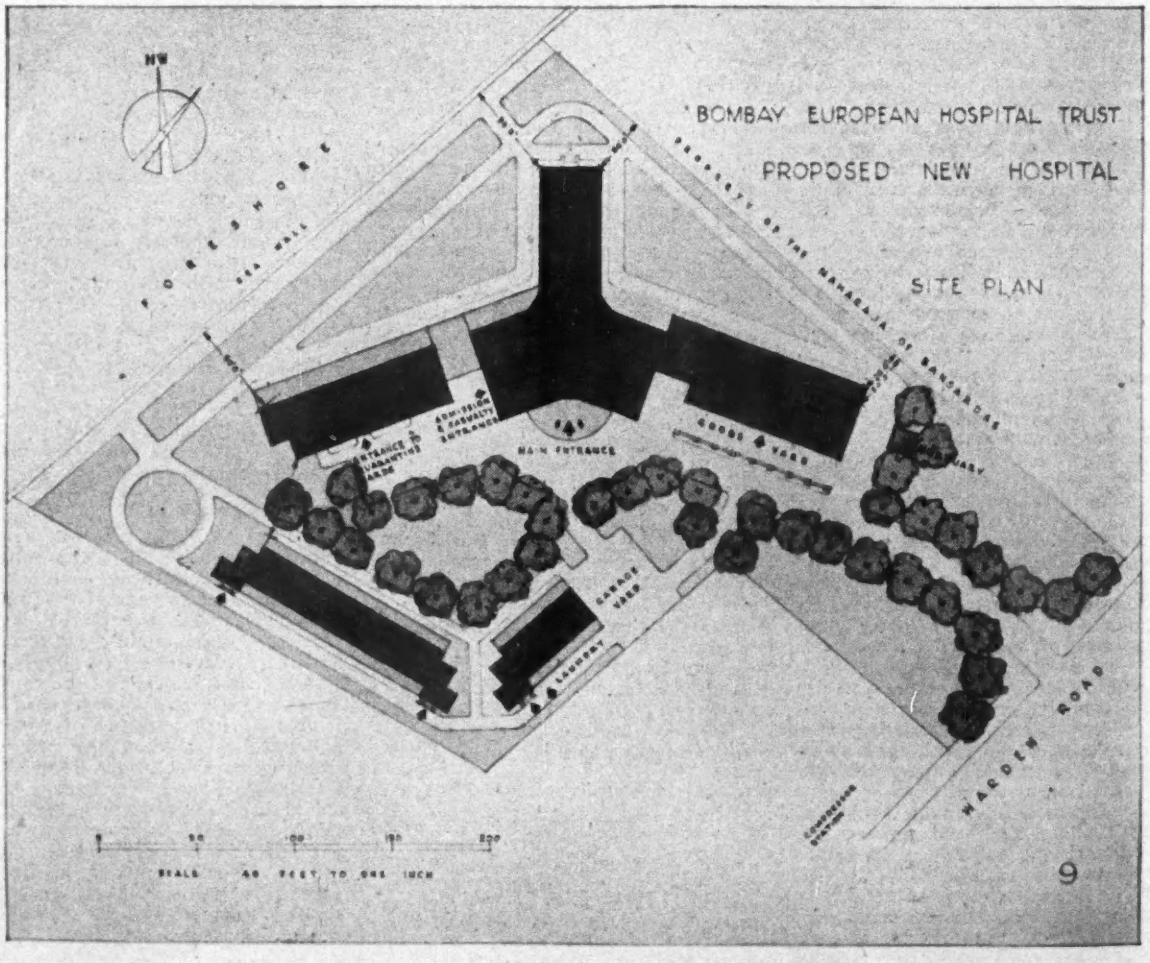
RECENT efforts to preserve the famous Wortham smock mill in East Anglia, regarded by archæologists as unique, were too late to be of avail, for recently the building toppled over on its side. For some time the question of its preservation had been before the East Suffolk County Planning Committee, and the Ministry of Town and Country Planning had entered it on its list of buildings of architectural and historical interest. An order for its preservation made by the County Council was later revoked after experts had estimated that the cost would be about £1,000. While the possibility of starting a preservation fund was under consideration gales moved the revolving cap on the crown, turning the mill into the wind; supporting timbers then worked loose and deteriorated.



Perspective View from the North-West.

# COMPETITION: PROPOSED NEW HOSPITAL, BOMBAY

## WINNING DESIGN: By SAXON SNELL AND PHILLIPS, F.R.I.B.A.



# COMPETITION

## PROPOSED NEW HOSPITAL, BOMBAY

THE result of a limited competition for a proposed new hospital building, Bombay, for the Bombay European Hospital Trust, has recently been made known.

The architects invited to submit designs were Lanchester and Lodge, FF.R.I.B.A., P. J. B. Harland, F.R.I.B.A., and Saxon Snell and Phillips, F.R.I.B.A., all of London, and Stephenson and Turner, of Melbourne, Australia. The assessor, Mr. H. Foster King, F.R.I.B.A., has declared the winning design to be that submitted by Messrs. Saxon Snell and Phillips, F.R.I.B.A.

Following are extracts from the winners' report:—

The first consideration in the lay-out of this design has been so to orientate the buildings that all the wards and rooms occupied by the patients and the resident European staff receive the maximum benefit from the north-westerly winds, and shelter from the intense sunlight of the inter-monsoon period. To this end the wards and rooms have been planned on the north-west side of the building with aspect over the open sea, and on the south-east side are the ancillary rooms, corridors, staircases, etc. The north-west wing is shortened floor by floor as it rises, so as to interfere as little as possible with the free play of air to the faces of the north-east and south-west wings.

The servants' quarters are arranged in two buildings along the southern sides of the site, and they too have balconies with north-west to north aspects.

The scheme has been laid out to minimise both horizontal and vertical travel, and to this end the patients' accommodation, and special departments to which there will be most traffic, have been confined to the three lower floors, the Class A, B and C staff quarters being placed on the two upper floors.

On the ground floor are the main approach, with entrance hall and inquiry office, with, on the right, the administrative office and clerks' room, etc., and on the left, waiting room, visitors' lavatories and public telephone. The entrance hall opens on to an inner hall with main staircase and two electric lifts serving all floors. This hall leads to the kitchen department, the special departments and the out-patients' and casualty departments. The casualty department has also a direct entrance from the roadway. Quarantine wards are separated by a wide space, open back and front, below the upper storeys, forming a complete cut off from the other departments on this floor. These wards have their own entrance from the roadway which will be the normal approach to them, but in extremely inclement weather, access can be effected across the covered "cut off."

On the first floor the committee room and chapel are arranged in the centre over the entrance hall and adjoining rooms. The men's and seamen's wards, arranged as one nursing unit, are planned in the north-east wing, and each has its own w.c.'s and baths, but the remainder of the ancillary accommodation is common to both.

**Perspective View of Main Entrance.**

The women's, children's and obstetrical wards, arranged as another nursing unit, are planned in the south-west wing, the obstetrical wards being furthest from the entrance to the unit, with the delivery room cut off at the extreme end.

In the central position in the north-west wing (reduced in length on this floor) is the operating department, with main and septic theatres, each with anæsthetising, sluice and sink rooms, etc. Patent shadowless electric lamps are provided to give uniform lighting over the operating tables.

The whole of the second floor is devoted to 21 paying patients, all in single rooms.

All the 24 Class "C" quarters for nurses are arranged on the third floor, and all except two open on to a shallow balcony and have a north-west aspect.

The two Class "A" and two Class "B" quarters are planned on the fourth floor, the former being in the two wings and the latter in the centre. All four quarters are arranged as self-contained flats—the Class "A" type having sitting-cum-dining room, two bedrooms, two bathrooms with w.c.'s, kitchenette, store room and servants' room.

The buildings have been designed on the grid principle for erection as a framed structure in either steel or reinforced concrete, supported on wide reinforced concrete foundations to spread the weight over the rather low bearing capacity subsoil. External walls would be of hollow construction, rendered externally; and internally the walling generally would be of hollow partition blocks.

The floors and roof would be of reinforced concrete, with cantilevered extensions as shown, for the dual purpose of forming balconies and sun-shield. Roller reed sunblinds suspended from the outer edge of the soffit of the balcony over are proposed for all the wards and rooms on the north-west front, though Venetian pattern wood shutters could be provided instead if thought advisable.

Internally the finishings would be of the most up-to-date hospital type, with tile or terrazzo or hardwood block floors, according to the location, plastered walls and ceilings, and glazed tile dadoes in the ancillary rooms, flush pattern doors in solid frames, with opening fanlights over, and windows of casement-type glazed doors with opening fanlight over. The sanitary fittings, of selected design for their respective positions, would be fixed so as to have uninterrupted floor space, and in each ward sink room would be a modern enclosed cabinet for emptying and washing bedpans.

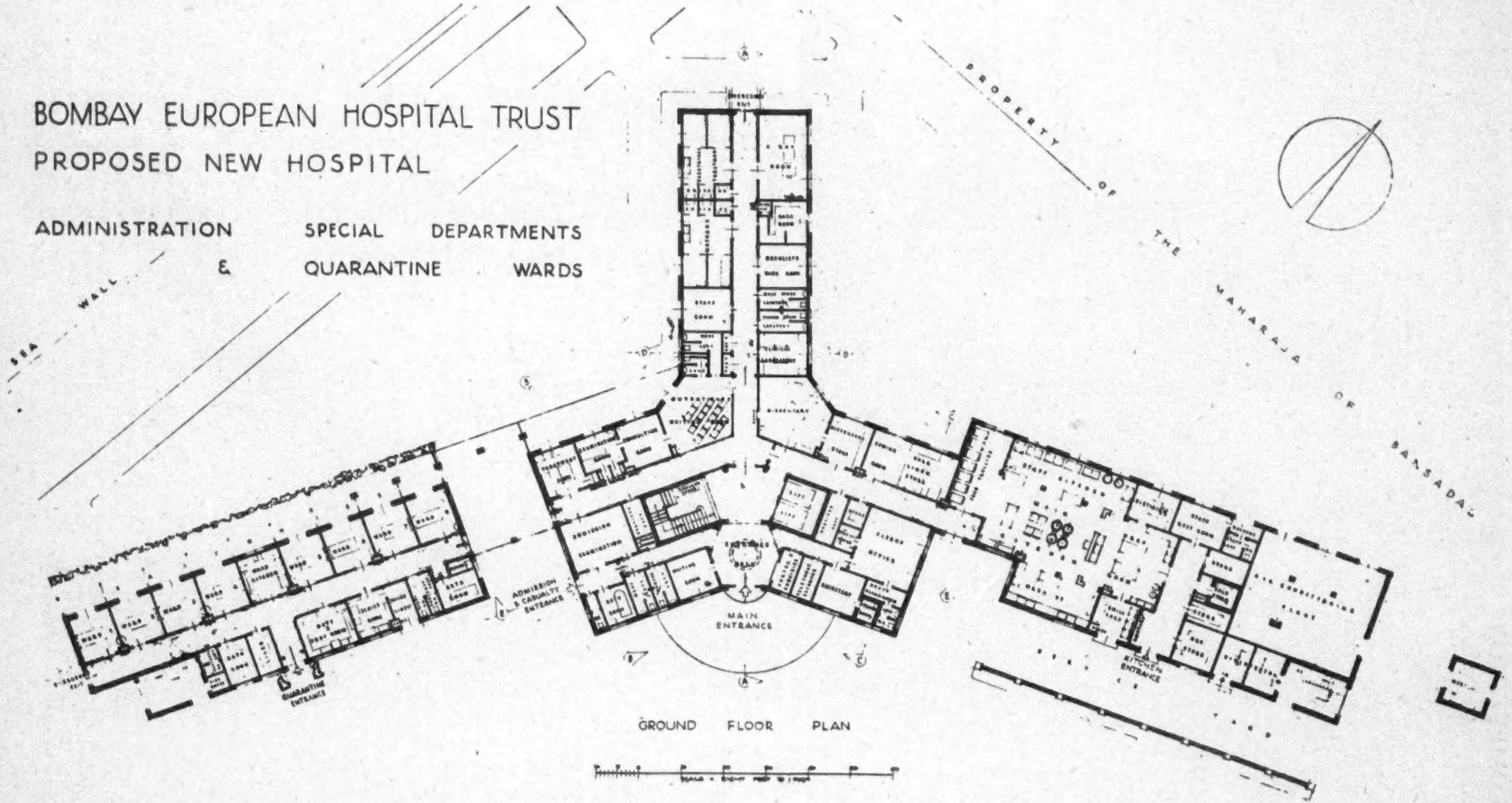
The service pipes would be carried in vertical and horizontal ducts, the latter being formed over the longitudinal corridors by means of a false ceiling fixed 2 ft. below the ceilings in the adjoining wards and rooms. Access panels would be arranged in suitable positions in both vertical and horizontal ducts.

The estimated cost of the hospital, on the basis laid down in the conditions, would be £61,820.

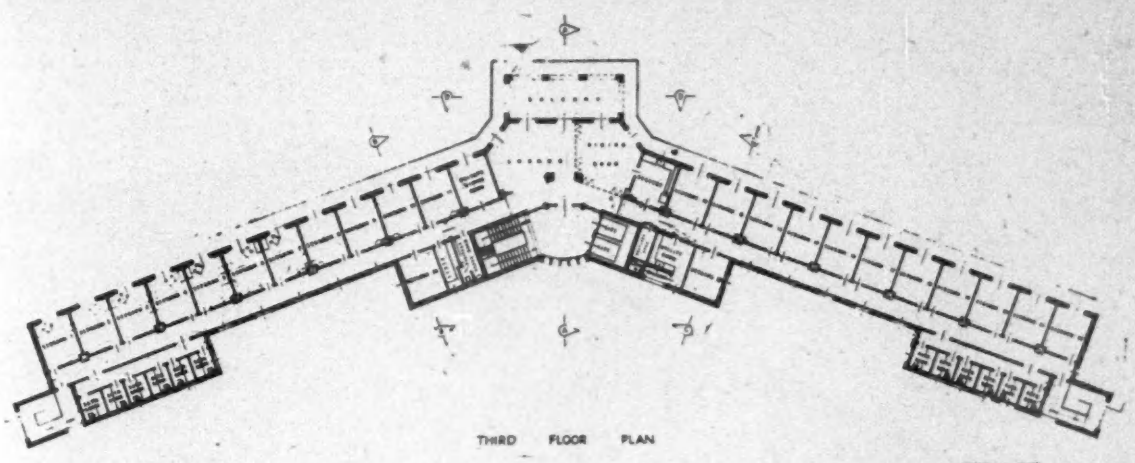
# BOMBAY EUROPEAN HOSPITAL TRUST

## PROPOSED NEW HOSPITAL

ADMINISTRATION & SPECIAL DEPARTMENTS
QUARANTINE WARDS



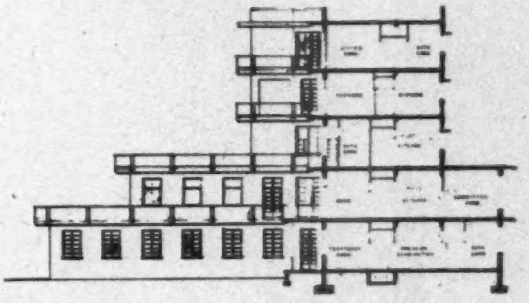

GROUND FLOOR PLAN



THIRD FLOOR PLAN

BOMBAY EUROPEAN HOSPITAL TRUST
PROPOSED NEW HOSPITAL

PRIVATE PATIENTS DEPARTMENT INCLUDING
ACUTE MENTAL WARDS

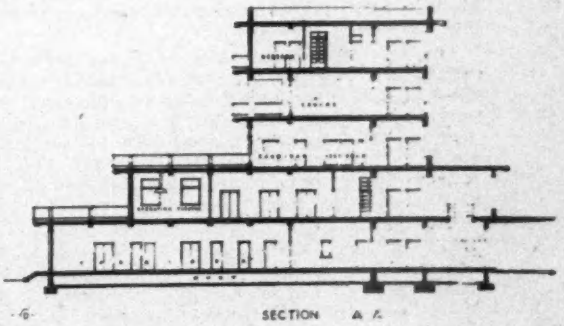


SECTION B-B

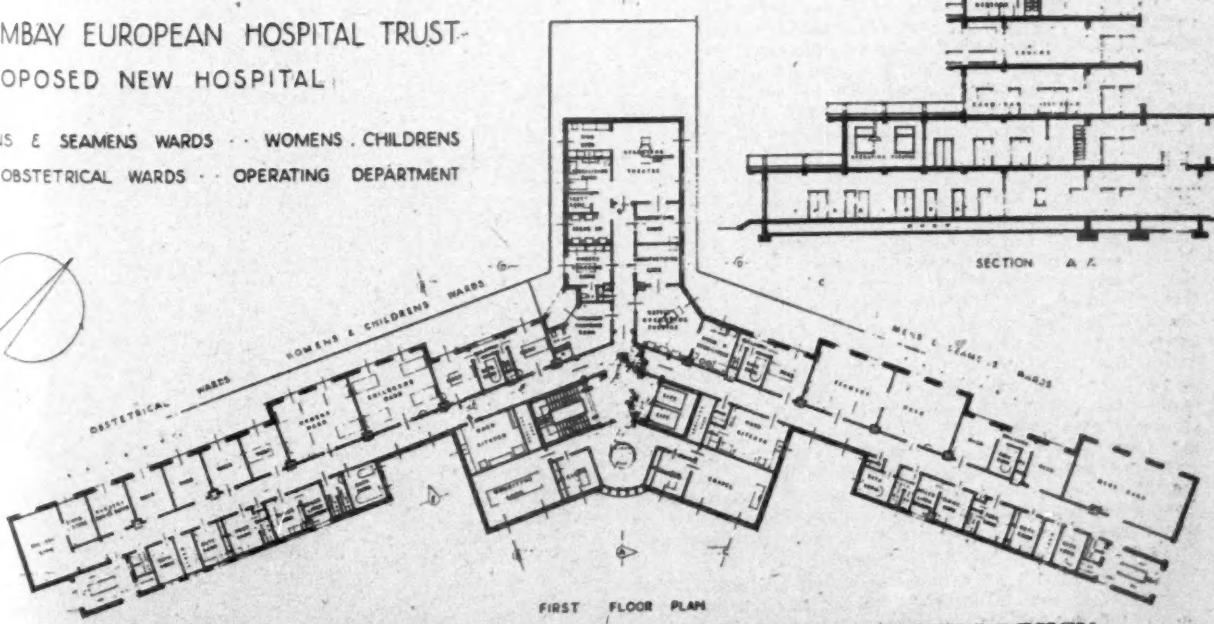
SECOND FLOOR PLAN

BOMBAY EUROPEAN HOSPITAL TRUST
PROPOSED NEW HOSPITAL

MENS & SEAMENS WARDS · · WOMENS . CHILDRENS
& OBSTETRICAL WARDS · · OPERATING DEPARTMENT



SECTION A A

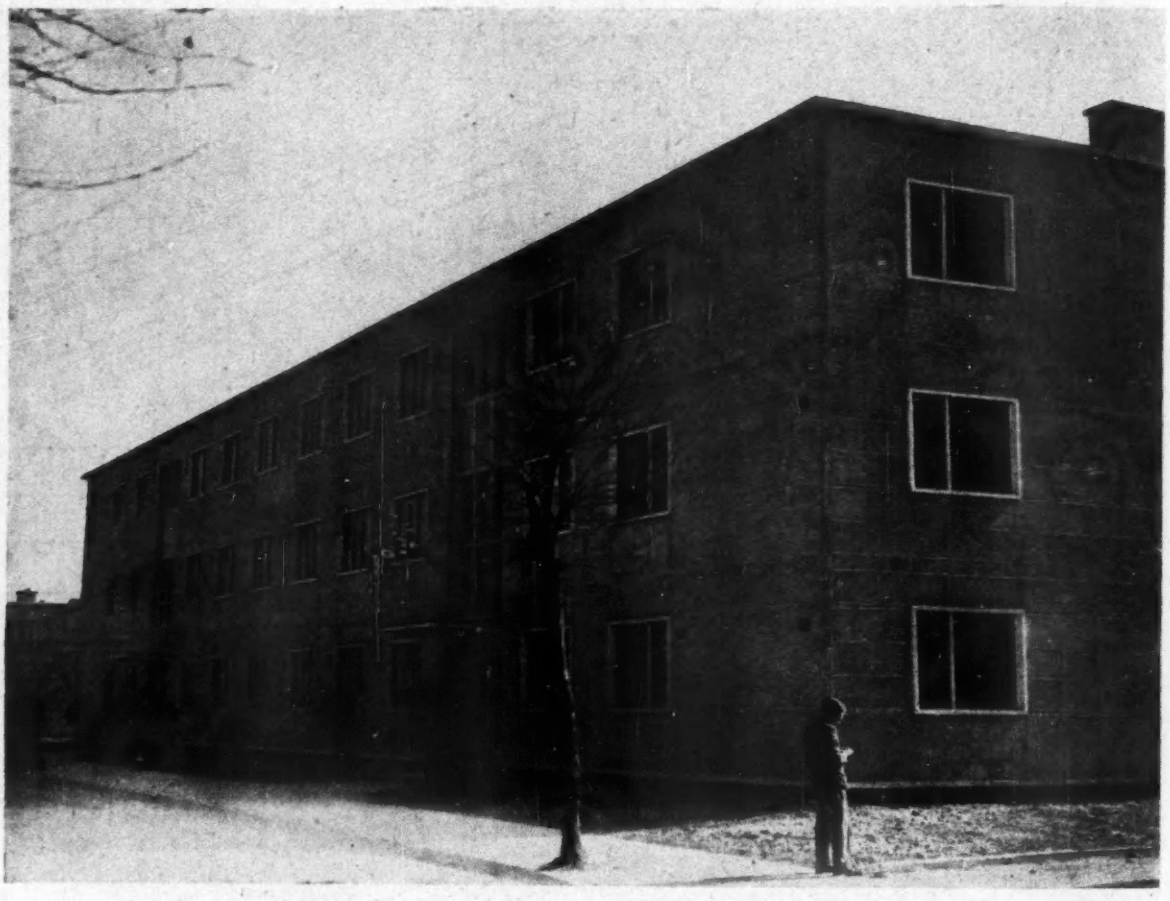



FIRST FLOOR PLAN

**COMPETITION: PROPOSED NEW HOSPITAL, BOMBAY. WINNING DESIGN.**

**By SAXON SNELL AND PHILLIPS, F.R.I.B.A.**

E



# PRE-CAST CONCRETE-FRAMED FLATS, POPLAR

## M.O.W. ARCHITECTS' DEPT. in conjunction with W. J. RANKIN, A.M.I.C.E., Borough Engineer and Surveyor

THE FIRST BLOCK OF PRE-CAST CONCRETE-FRAMED FLATS to be built in England has been completed on a site in Mellish-street, Poplar, and was opened on March 10 by the Minister of Works.

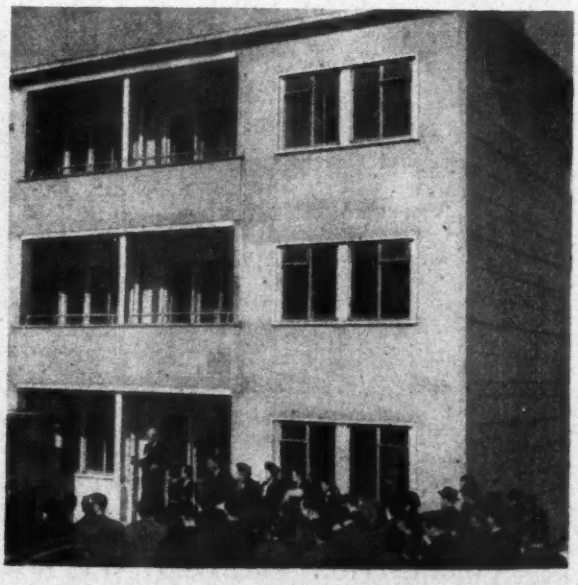
The flats are a three-storey block having four flats on each floor. All flats have an entrance hall, living-room, fitted kitchen, two double bedrooms and one single bedroom, bathroom and separate lavatory. A perambulator store is provided on the ground floor for every flat, while the first- and second-floor flats also have a covered balcony and a "utility room" in addition. All balconies and living-rooms face south.

The construction system employs pre-cast concrete stanchions and beams which form the load-bearing framework of the flats. The wall cladding is structurally independent of the main frame, and consists externally of pre-cast concrete slabs, and internally of foamed-slag blocks, with a cavity between the two. The outer slabs have a rough texture finish which gives a pleasing and hard-wearing surface, while the use of foam-concrete for the inner leaf gives satisfactory thermal insulation. All constructional units are factory-made, away from the site. Experience has shown that the system can give satisfactory speed of erection. Erection of the frame commenced on September 10, 1947, and the third storey was completed in 36 working days, including Saturday mornings. While the erection of the third storey was proceeding, the first and second floor units were laid and completed in three weeks, these floors forming working platforms for the higher floor and roofs and for men building the walls.

As a result of the experience gained on this site, it is considered that a normal time for the erection of a similar block would be approximately five months.

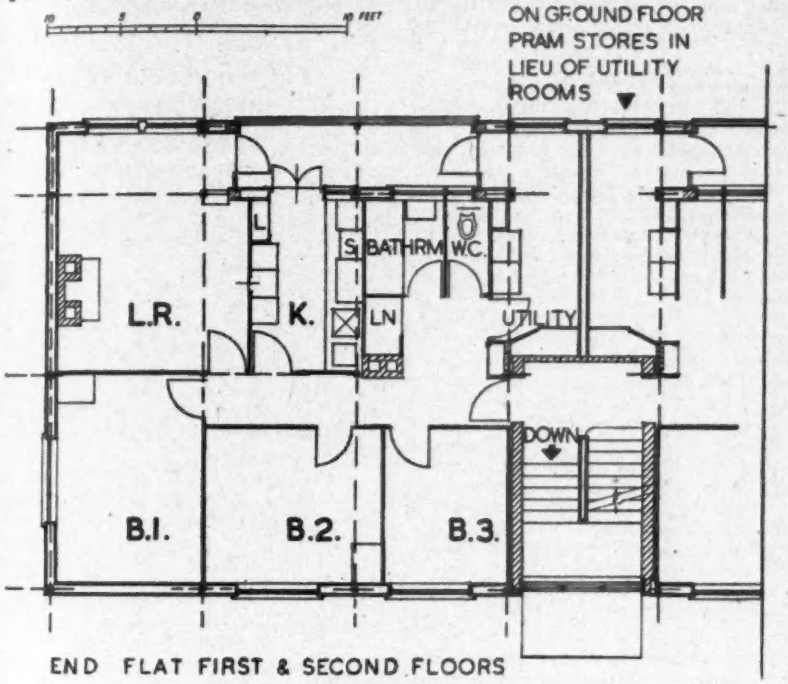
The Mellish-street block, with another erected in Scotland, forms what is known as a "development group."

The walls of the three flats at the west end of the building are separated from the structural frame by felt strips for the purpose of tests on sound insulation. The ground floor is constructed of reinforced concrete 6 in. in thickness, on account of the nature of the subsoil in this particular area.



**Part of Rear (South) Elevation.**

The first and second floors are of pre-cast concrete units placed on the main framework, and, with the exception of kitchens, bathrooms and lavatories, are finished with floor boarding laid on timber battens and bituminous bonded fibreglass, as a precaution against sound transmission. The roof is flat, constructed of pre-cast roofing slabs, and finished with asphalt. The flats were erected under contract for the Ministry by the Poplar Borough Council's Direct Labour Organisation, and the pre-cast concrete units were manufactured by Messrs. Orlit, Ltd.




**A Typical Flat Plan.**

# SOCIETIES AND INSTITUTIONS

## SOUTH WALES INSTITUTE OF ARCHITECTS

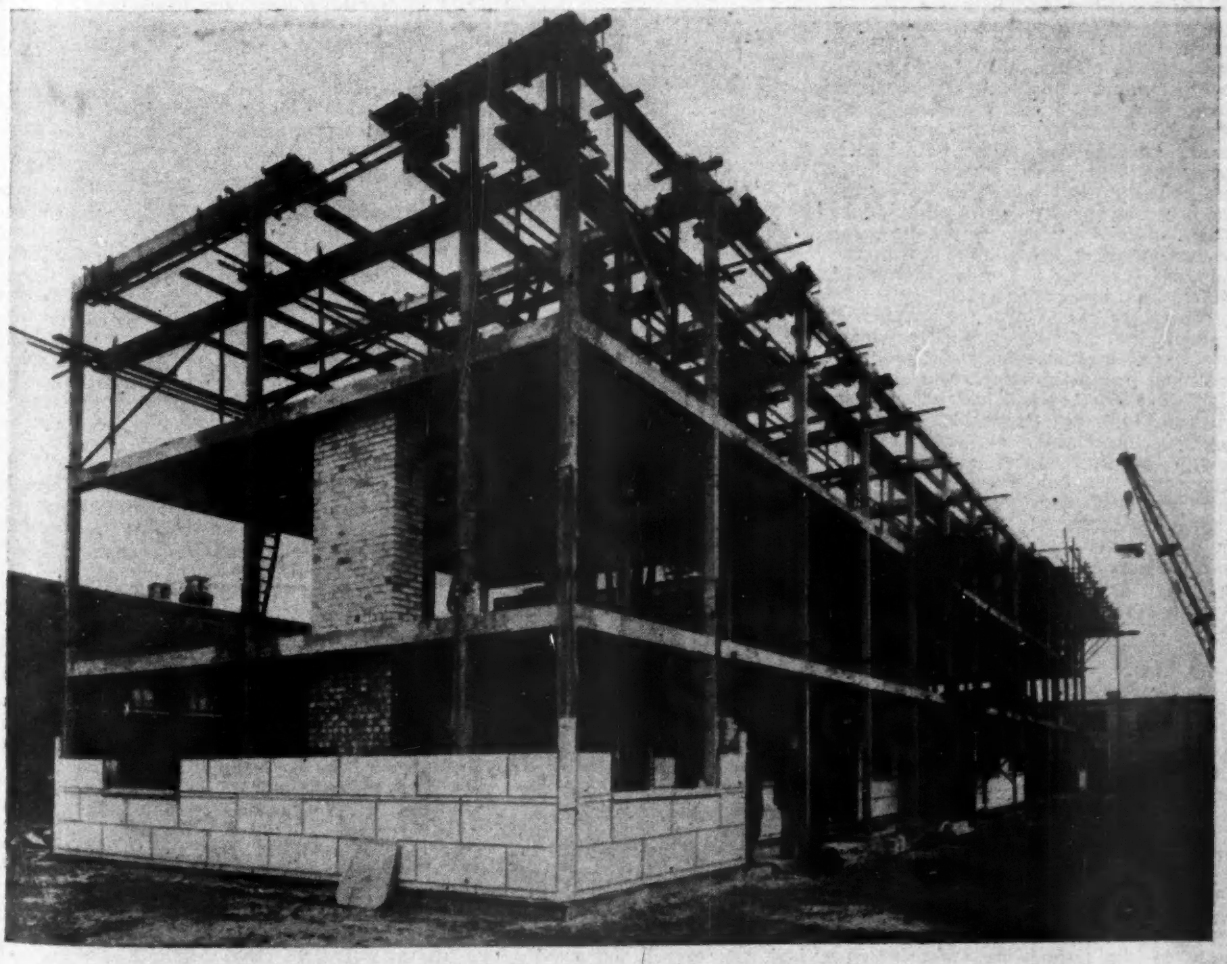
At the annual meeting of this Institute the following officers were elected: Chairman, Mr. F. A. Broad; hon. secretary, Mr. C. G. Tagholm; hon treasurer, Mr. O. S. Portsmouth; hon. auditor, Mr. Edwin Smith. Mr. J. Herbert Jones, who has been the hon. secretary of the South Wales Institute for 29 years, has retired.

## R.I.A.I.

The officers of the Royal Institute of Architects in Ireland, for 1948, are: Mr. Frank McArdle (President), Mr. W. H. Howard Cooke (Vice-President), Mr. John L. Griffith (hon. Sec.), and Mr. Charles Aliaga Kelly (hon. Treas.). The council are: Messrs. E. D. Buckley, J. M. Fairweather, D. FitzGerald, E. Humphreys, T. F. Inglis, T. P. Kennedy, R. McGrath, G. McNicholl, H. H. Hill (provincial seat), H. S. Robson, D. P. Hanly. Past-Presidents, *ex-officio* members of council, are: Messrs. G. F. Beckett, H. Allberry, F. G. Hicks, L. F. Giron, S. S. Kelly, V. Kelly, L. O'Callaghan, J. J. Robinson, G. P. Sheridan, and J. H. Webb.

The following were granted membership in 1947: Capt. P. V. Brennan; Messrs. P. A. Devaney, H. Briscoe, J. M. Dunne, R. N. Dobbyn, M. Halton, D. Lynch, N. Neagher, J. O'Hanlon Hughes, C. O'Reilly, R. R. Patterson, W. F. Phillips, O. C. Richardson, T. F. Randal, J. C. Thompson, G. O'Neil, F.R.I.B.A., Mrs. S. Crowe, and Miss M. Fitzgibbon.

Mr. R. H. Gibson was elected Fellow.



**View showing the Flats during Construction.**

# PLANNING APPEAL DECISIONS

## A MINISTRY BULLETIN

By Norman P. Greig, B.A., Barrister-at-Law, F.R.San.I., F.I.Arb., etc.

A PERUSAL of the last-issued "Bulletin of Selected Appeal Decisions" (No. II, December, 1947) of the Ministry of Town and Country Planning* is interesting, not only because of the diversity of the subject-matter, but also because of the mixture of law, equitable principles and common-sense on which the decisions are based. On occasions, both the Council and the Minister are desirous of following the recommendations of the Greater London Plan, but in other cases the Minister will not allow himself slavishly to follow such a course if it appears that equitable considerations should prevail. As a result, it cannot be said that these decisions will necessarily establish precedents to be followed hereafter, but are often determinations of matters in the light of circumstances prevailing at the time. The following brief excerpts will show the working of the Departmental mind in its capacity as a court of appeal for persons aggrieved by the Council's decision in a large variety of matters in connection with Town and Country Planning.

The appellant proposed the conversion of a four-bedroom house into two self-contained flats, on the ground that she found her house too large for single occupation. In the neighbourhood there was a demand both for flats and houses of the type of the appellant's. The general policy of the Council was to refuse consent for such conversions on the ground that there was a demand for three- or four-bedroom houses. To permit the conversion would, claimed the Council, create difficulties in regard to other applications, tend to upset their Town Planning Scheme, and adversely affect the character of the neighbourhood. The Minister recognised the ever-increasing demand for smaller dwellings and thought the Council was providing for it by the sub-division of many of the larger and older houses in the area, and he considered it inadvisable that houses suitable for single family occupation should be sub-divided (II/15).

Where in the Thames Valley, near London, the appellants wished to replace two three-storey houses in a terrace, demolished by war damage, by a block of eight flats, the Council had refused permission for the particular suggestion because the density of dwellings and population in the area were excessive, The density, in fact, in accordance with the proposed development would be greatly in excess of that recommended in the Greater London Plan for suburban neighbourhoods. The Council had suggested four flats. The Minister was unable to permit such a departure as was proposed from the recommended density standards and agreed to the four flats only (II/16).

In another case, the Council, granting permission for the interim development of a building estate on land adjoining an avenue, imposed a condition that a piece of land, which the Council agreed to maintain as an open space, was to be conveyed free of cost to the Council. On appeal, the Minister was advised that there are no powers given by the Town and Country Planning Act, 1932, to enable an authority to require the conveyance of land, except Sections 25 and 26 of that Act, and these are available only to the responsible authority of a scheme which has come into operation. Hence, to make such a condition during interim development, permission which would have required the owner to surrender his right to land if he carried out the development for which permission was allowed, would be improper. So the appeal was allowed, the condition was discharged and the law vindicated (II/17).

An appellant, proprietor of an old-established firm of boatbuilders in a riverside resort on the Thames above London, whose house and buildings had been destroyed by enemy action, was refused permission to build a new house on the old foundations because the Council said that the area was zoned as an open space and they wished to preserve the amenities of the neighbourhood. They furthermore expressed it as their settled policy to fall in with the Greater London Plan and so make available to the public all river frontages. The Minister agreed that the public should enjoy these amenities over as wide an area of the riverside as possible, but the appellant's business of boatbuilding and hiring of craft for pleasure was an integral part of these amenities. Also, a building of the design and appearance that the appellant proposed would be "quite unobjectionable." So the Minister, while sympathising with the aims of the Council as expressed above, saw no reason why the appellant should not rebuild, and allowed the appeal (II/11).

In the following case, a little sentiment combined with much common-sense would seem to have influenced the decision. An appellant was granted permission to erect shop premises in a proposed general business zone on condition that he did not carry on his trade of fish-fryer. The Council imposed the condition because they had already given approval to a fish-frying business on an adjoining site and stated, *inter alia*, that two such businesses in an area intended to accommodate only eight shops "would not constitute balanced development nor good planning." Evidence at the inquiry, however, showed there was a considerable demand for fish-frying facilities in the neighbourhood. The Minister, accordingly, decided that, subject to proper safeguards (to prevent nuisance from improper equipment), he thought the proposed development was appropriate to such a zone and that the fact of there being a second similar business near was no reason for the imposing of the condition the Council demanded. Result—appeal allowed subject to a condition that equipment to be used should be to the satisfaction of the Council or of himself, if any appeal should eventuate (II/7).

Space will only permit a brief reference to two further decisions. The Council refused an application for the erection of a bungalow on surplus land after development had been completed at maximum density, and the decision was upheld (II/13). Finally, the Council refused an application to build a brick bungalow to replace a burned-down building, but on a different part of the same curtilage. Among their reasons was the claim that the proposal would be contrary to the intended zoning of the locality and would involve "danger to health through lack of services." But the Minister considered it would be a denial of justice to refuse permission for replacement of an existing building that had not reached the end of "its useful life" (II/14).

Among the remaining cases contained in the Bulletin are several concerning sports stadiums, greyhound racing tracks, meeting places for motor-cycle clubs as well as questions in regard to dwelling-houses for agricultural key workers. In all his decisions, it can be fairly said the Minister has, in giving his opinions, advanced reasons and arguments that, in our opinion, merit general approval.

* London: H.M. Stationery Office, 6d. net.

# REQUISITIONED PROPERTY

## INCREASED RENTAL COMPENSATION

UNDER the Requisitioned Land and War Works Act, 1948, increased rental compensation in respect of requisitioned property will in many cases be payable as from February 19, 1948, the date when that Act became law.

The new basis is, broadly speaking, the current market value of the property, subject to a maximum, in the case of rent-restricted property, of the standard rent (with any permissible increases), and in other cases, of the 1939 rental value, plus 60 per cent.

Where the requisition begins on or after February 19, 1948, the new basis will be applied automatically, and no action is necessary on the part of claimants, apart from completing and submitting in due time the form of claim which they will receive from the requisitioning authority.

In the case of property which was requisitioned before February 19, 1948, and was still under requisition at that date, it will be necessary for a claim to be submitted for any increase in rental compensation which is due under the terms of the Act; and the Act provides that, save in special circumstances, such claims must be made by August 19, 1948.

The Act also provides that any outstanding claims to increased rental compensation under Section 45 of the Requisitioned Land and War Works Act, 1945, must be made by the same date.

Arrangements are being made for all existing recipients of rental compensation, so far as possible, to receive (as a rule with their next cheque) a notice telling them that they be entitled to an increase and asking them to apply for a form of claim.

Those who have not received this notice by the end of March should get in touch at once with the department or authority which holds their property on requisition, as also should those who wish to make a claim under Section 45 of the 1945 Act.

The new Act also modifies the law relating to terminal compensation (that is, compensation payable on derequisitioning in respect of damage done during the requisition). The change applies to property derequisitioned on or after February 19, 1948, and no special action by owners is necessary.

**Reports on German Industry.**

A further 14 reports on German wartime industrial developments were published on March 13. They include "German Hand Tools Industry. Short and Cross-Cut Saws" (H.M.S.O., 7s. 6d. or 7s. 8d. post free) and "German Hand Tools Industry. Handles" (H.M.S.O., 5s. or 5s. 2d. post free). T.I.D.U., German Division, Board of Trade, 40, Cadogan-square, S.W.1, is prepared to receive inquiries regarding all problems relating to scientific and technical intelligence on both German and Japanese industry.

# CONCRETE CONTROL

## A Paper read to the Reinforced Concrete Association

By L. J. MURDOCK, Ph.D., M.Sc., A.M.I.C.E.

CONTROL of all the operations, from the selection or production of materials to the finishing and curing of the concrete, is essential to the construction for a high-class structure. This control is generally effected by constant supervision on the part of the concrete engineer, to ensure that errors in technique and omissions on the part of the workmen are eliminated. The concrete engineer must also make periodic tests on both materials and the concrete produced, in order to maintain uniformity, and to make sure the specified requirements are obtained.

The principal duties of the concrete engineer or other person responsible for concrete quality may be defined as follows:—

(1) He should be familiar with the plans and specifications, especially those sections which would deal with the concrete work under his control, and should see that the work is executed accordingly;

(2) If any sections of the specification are impracticable, or require modification, he should report to his immediate superior, or to the employing authority, in order that suitable alternative measures can be discussed;

(3) He should see that the materials are of satisfactory quality, the proportioning of the materials is accurate, the water content is within the limits allowed, and the concrete is of uniform and satisfactory consistency;

(4) He should acquaint himself with the details of the formwork, reinforcement, handling, placing, consolidation, finishing and curing, and should point out any errors which occur in the technique. He should be able to advise on the best method to adopt in any particular circumstance;

(5) He should take samples of the materials, either for site tests or tests at a central laboratory, make slump tests, and prepare concrete cubes for testing;

(6) He should keep a record of work he has done, and should chart results of tests in order that any deterioration over a period may be observed, and measures taken to effect improvements.

The concrete engineer must be certain before making a complaint that it is of sufficient importance to be justified. If it is, he should insist that the defective work or method is remedied within a reasonable period. At the same time he should make every effort to maintain control and co-operation with the agent, site engineer, foreman, ganger, and workmen.

Delegation of the duty of the control of concrete quality on the site must depend on the quantity of work involved. On small contracts it is obviously uneconomic to employ an engineer solely for the purpose of controlling quality of concrete, and it is usual for the agent to delegate the duties to the general foreman, or one of the site engineers. In such cases it is advisable to make every effort to impress on the responsible person the importance of the correct technique in making concrete and the correct method of making control tests. Control on large contracts may require one or more concrete engineers, with assistants to help with the preparation of test specimens, working in conjunction with a site laboratory.

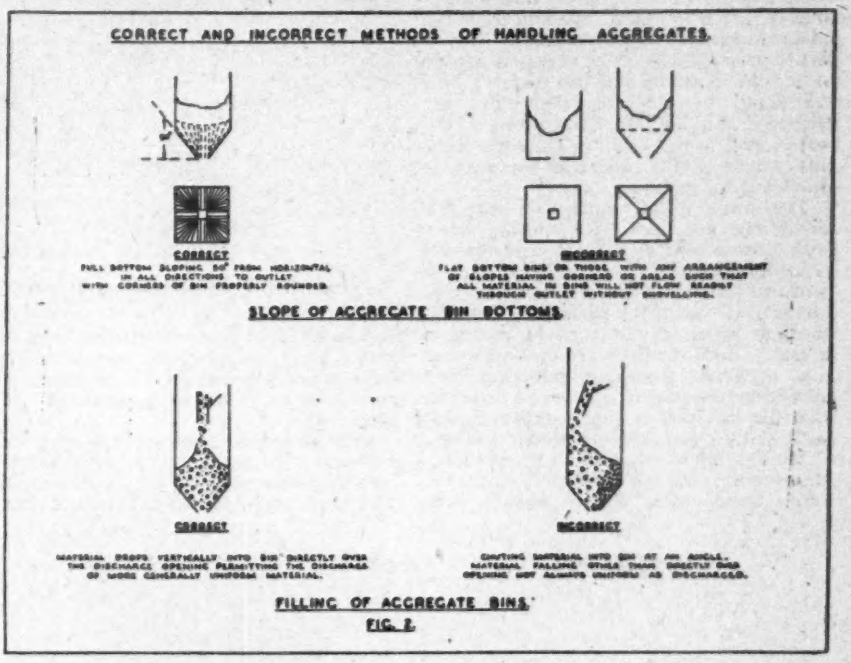



FIG. 2.

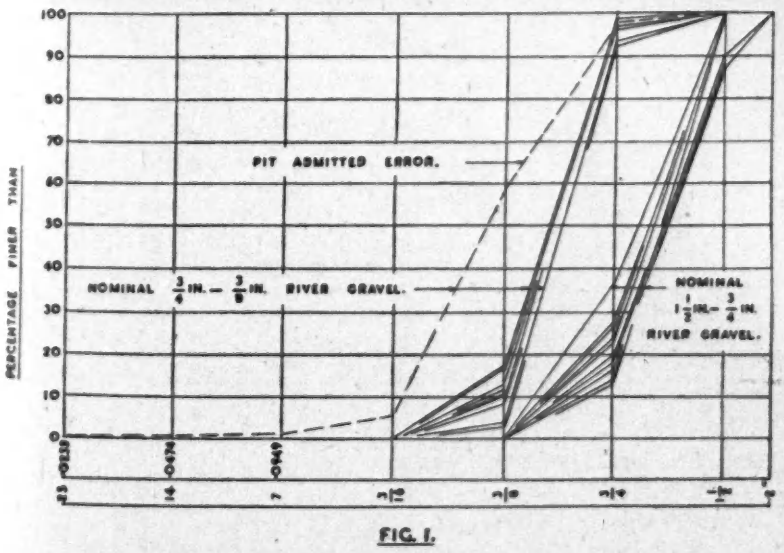

GRADINGS OF A TYPICAL DAY'S DELIVERY OF 1½ IN.– ¾ IN. & ¾ IN.– ⅜ IN. RIVER GRAVEL FROM A PIT WITH A LARGE WASHING & SCREENING PLANT.
PERCENTAGE FINER THAN
PIT ADMITTED ERROR.
NOMINAL ¾ IN.– ⅜ IN. RIVER GRAVEL.
NOMINAL 1½ IN.– ¾ IN. RIVER GRAVEL.

FIG. 1.

**Equipment.**

The amount of equipment provided depends on the quantity of concrete to be made. The following items are among those commonly required:—

Straightedge;
Foot rule;
Tape;
Thermometer (maximum and minimum);
Slump cone and rod;
Cube moulds, base plates and rammer;
1 cub. ft. measure;
Set of B.S. sieves, 1½-in. down to 200 mesh;
Bottles and supply of caustic soda for testing organic impurities;
Cylinder 100 c.c. for field silt test;
Primus, hot-plate or gas-ring for quick drying of aggregates. An oven may be used on larger contracts;
Frying pan, metal trays, etc.;
Pycnometer;
Tins for sampling aggregates, cement, etc.;
Scales, 5 kg. × 1 gm. and weights;
Storage tank for storing concrete cubes. This may be thermostatically controlled on larger contracts;
Trowels, shovels, spanners and other tools.

**Aggregate Supplies.**

One of the first duties of the concrete engineer is to make an inspection of likely sources of supply of aggregate, and to obtain samples for testing. An initial examination of samples can be made, either at the source of supply or on the site, and any distinctly unsatisfactory samples rejected. Other samples should then be sent to a central laboratory for comprehensive tests and the preparation of a trial mix, in order to determine the best proportions and the average strength attainable with the required workability on the site. In making an inspection at

a sand and gravel pit, the following should be noted:—

Deposits of gravel and sand are usually covered with overburden which has to be removed and consists of top soil and soil and stones mixed. The removal is not always straightforward owing to the presence of faults and dips in the gravel seams, and unless care is taken to remove all the overburden, occasional loads of dirty aggregate occur. Gravel seams often overlie beds of clay, and it is especially necessary that the inclusion of lumps of this clay in the gravel should be avoided, since even with washing, clay lumps are extremely difficult to remove. Where draglines or grabs are used, the danger of the inclusion of clay lumps is greater in wet pits than dry, because the driver is unable to see the bottom, and therefore control the depth to which he digs. Pits are termed "wet" or "dry" according to the water level in the vicinity, although some pits which would otherwise be wet are dried out by pumping.

The washing of sand and gravel is sometimes no more than sluicing down with a hose-pipe in a lorry, and the dirt is simply washed from the top to the bottom. At other times gravel and sand are termed "washed" when they are lifted through water in a wet pit by means of a grab. Both methods are unsatisfactory, and materials from pits adopting them should be rejected unless there is evidence that the material as dug is uniformly and sufficiently clean without proper washing.

Stock piles should be examined thoroughly, as the surface material is often quite clean, due to washing with rain, whereas the inner material may be dirty. The arrangements for screening the aggregate should also be examined, as poor plant can result in aggregate of variable grading.

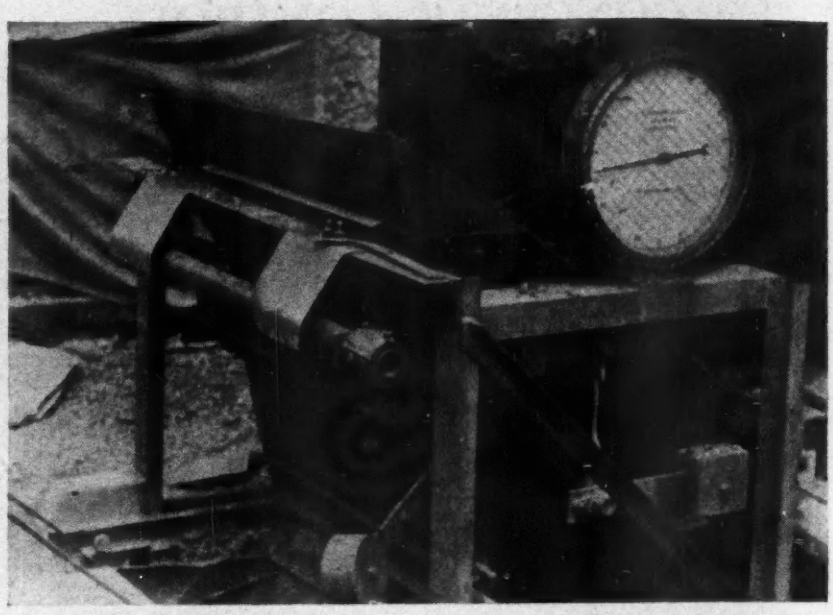


**Fig. 4.—Weigh batching equipment, employing spring balance mechanism.**

Representative samples of the material, as stock piled ready for delivery, should be obtained at the time of the inspection. The method of taking the samples will have an important bearing on the accuracy of results and the method laid down in Appendix A of B.S.S. 882: 1944 should be adhered to as far as practicable. This is briefly to take portions from various parts of the heap, mix them together, and then quarter and requarter to obtain the desired quantity for testing, as given in the specification. Inspection

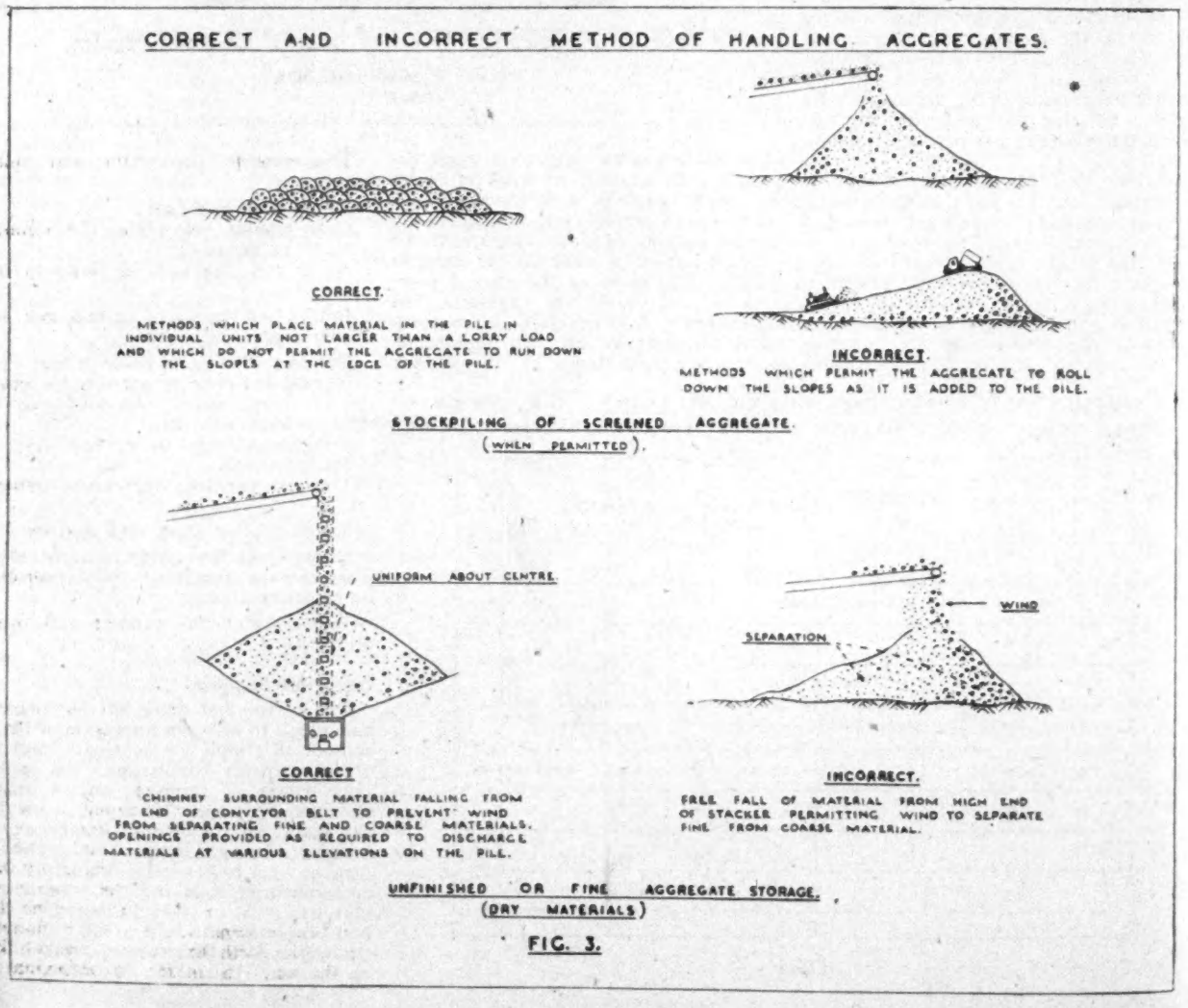

CORRECT AND INCORRECT METHOD OF HANDLING AGGREGATES.
CORRECT.
METHODS WHICH PLACE MATERIAL IN THE PILE IN INDIVIDUAL UNITS NOT LARGER THAN A LORRY LOAD AND WHICH DO NOT PERMIT THE AGGREGATE TO RUN DOWN THE SLOPES AT THE EDGE OF THE PILE.
INCORRECT.
METHODS WHICH PERMIT THE AGGREGATE TO ROLL DOWN THE SLOPES AS IT IS ADDED TO THE PILE.
STOCKPILING OF SCREENED AGGREGATE.
(WHEN PERMITTED).
UNIFORM ABOUT CENTRE.
CORRECT
CHIMNEY SURROUNDING MATERIAL FALLING FROM END OF CONVEYOR BELT TO PREVENT WIND FROM SEPARATING FINE AND COARSE MATERIALS. OPENINGS PROVIDED AS REQUIRED TO DISCHARGE MATERIALS AT VARIOUS ELEVATIONS ON THE PILE.
WIND
SEPARATION
INCORRECT.
FREE FALL OF MATERIAL FROM HIGH END OF STACKER PERMITTING WIND TO SEPARATE FINE FROM COARSE MATERIAL.
UNFINISHED OR FINE AGGREGATE STORAGE.
(DRY MATERIALS)

FIG. 3.

on these lines will give a useful indication concerning the efficiency in operation of the pit, the possibility of obtaining uniform supplies over a period, and an assessment of the reliance which can be placed on samples taken for the initial tests. Reports on inspections of the sources of supply should be read in conjunction with the test results when deciding on the aggregate to be used.

Site control of the proportioning of concrete to ensure the correct combined grading of aggregate and specified cement content begins with an inspection of the aggregates as they are delivered. Aggregates can be checked rapidly as they are delivered on the site by sieve analyses (wet) and visual inspection, and the results obtained are accurate enough to indicate serious errors. When sampling, it is advisable to obtain the sample from different parts of the load after deposition, as the grading may not be the same at the bottom of the lorry as on top. An example of typical gradings of samples of ¼-in.-⅛-in. gravel aggregate delivered during the course of a week on a contract where strict supervision was maintained is given in Fig. 1.

Clay lumps can be picked out by visual inspection. Silt and clay are found by shaking up the aggregate with water and allowing them to settle.

The deposition of the aggregates should be carefully regulated to prevent different sizes getting in the same heap, and to make certain that different sizes are separated sufficiently to preclude any intermingling. Whenever possible, some form of partition should be used to separate different sizes of aggregate. Care should also be taken to see that segregation of the aggregate does not occur in the stock piles. The usual difficulty is that the larger stones roll to the bottom.

Correct and incorrect methods of handling and stock-piling aggregates are shown in Figs. 2 and 3. These diagrams are based on the proposed recommended practice for measuring aggregates published by the American Concrete Institute.

**Cement Supplies.**

The quality of cement is usually assumed to be satisfactory, but samples can usefully be sent to a central laboratory for testing. From the results of the tests, that cement which gives the highest strength and is least variable can be chosen. In sampling it is advisable to select samples from several days' output in order to obtain information on any variation in the period. Samples of cement should be packed in airtight tins.

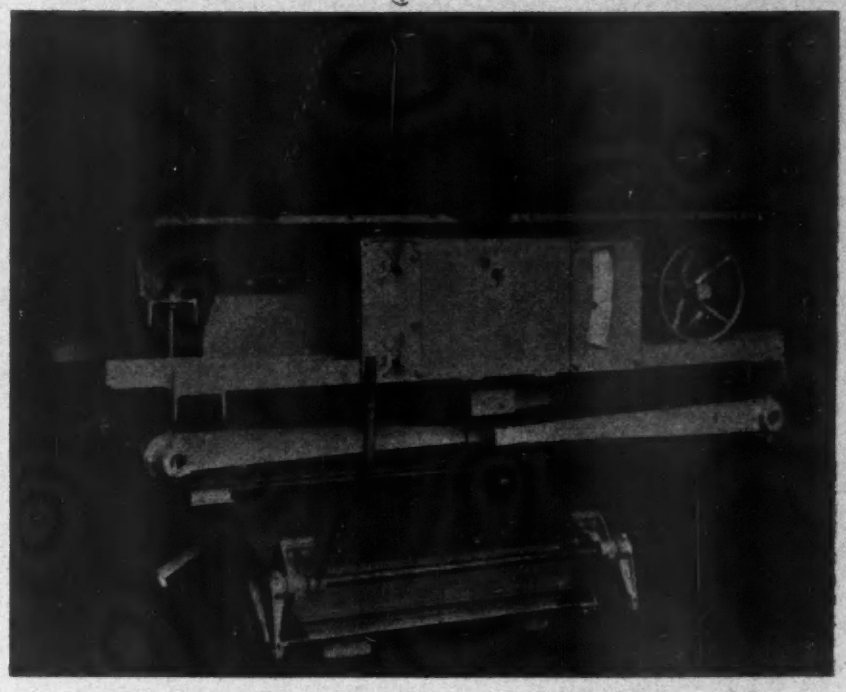


**Fig. 5.—Weigh batching equipment employing beam-and-jockey weight.**

**Fig. 7.—Method of judging tendency for concrete to segregate.**

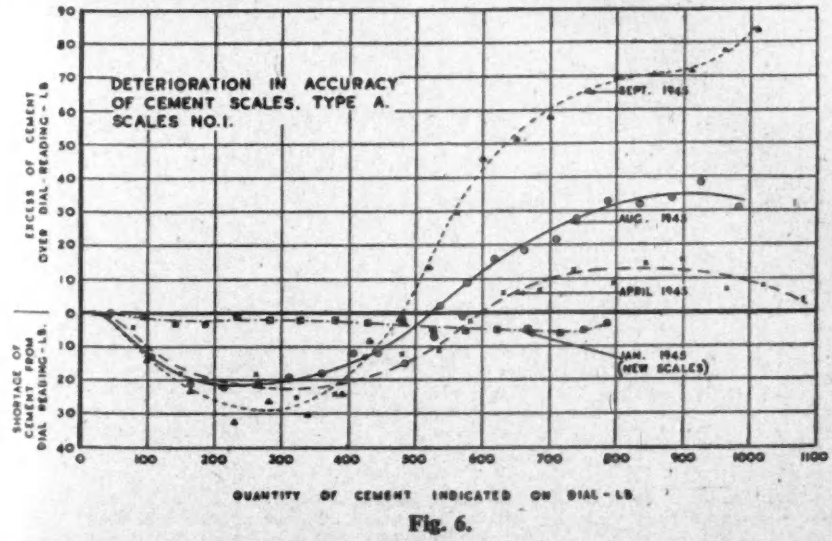

DETERIORATION IN ACCURACY OF CEMENT SCALES, TYPE A. SCALES NO.1.
SEPT. 1945
AUG. 1945
APRIL 1945
JAN. 1945 (NEW SCALES)
EXCESS OF CEMENT OVER DIAL READING - LB.
SHORTAGE OF CEMENT FROM DIAL READING - LB.
QUANTITY OF CEMENT INDICATED ON DIAL - LB.

**Fig. 6.**

**Proportioning of Aggregate and Cement.**

The method of proportioning concrete will depend to a large extent on the quantity of concrete required. On a small contract batching is usually done by volume, while on large contracts all the materials, except the water, may be weighed in large batching plants.

When volume batching is adopted the concrete engineer should see that gauge boxes, or some form of division in the loading skip of the mixer, are used to measure the aggregates.

The cement should always be measured by weight, either by adjusting the size of the mix to suit a 1-cwt. bag as delivered, or by the use of a weighing machine.

Batching by weight is the most accurate method, providing the equipment is calibrated before use and is properly maintained. Weigh batching equipment may be either of the spring balance type as shown in Fig. 4 or of the beam-and-jockey type shown in Fig. 5. Special care should be taken in the type of batching plant which employs a spring balance type of mechanism. Errors which are apt to occur in addition to those resulting from manufacturing faults are:—

(1) The knife-edges and other moving parts become clogged or blunt, causing stiffness of movement;

(2) Levers or rods may be bent and bind on some part of the framework;

(3) Dashpot damping devices may become detached or be filled with the wrong type of oil or water;

(4) In the beam-and-jockey type the beam may get out of balance due to movement of counterbalances, either in ignorance or loosening of the locking device;

(5) If the cement is weighed, it sometimes builds up in the weigh hopper and discharge chute, resulting in the use of too little cement;

(6) Care should be taken to see that spectators do not lean on the weigh-bucket, especially when calibrating.

Calibration of the weigh-buckets should continue to the full amount required in the batch. Necessity for this is demonstrated by the curves given in Fig. 6, which are plotted from the calibration of a cement weigh batcher over

*Left:* Harsh mix, liable to segregate. *Centre:* Workable mix. *Right:* Cohesive mix, satisfactory.

**Fig. 8.—Tendency to segregate as judged by shape of mix.**

a period of several months. If weights to a maximum of only 300 lb. have been used, it would have been assumed that the scales were weighting light, whereas above about 500 lb. the quantity of cement delivered was in excess of that indicated on the dial.

**Measurement of Mixing Water.**

Maintenance of the correct water-cement ratio depends on accurate control of the water at the mixer and on an accurate assessment of moisture present in the aggregates.

Water gauges on concrete mixers may be of three types, the principal features of which are as follows:—

(1) *Horizontal measuring tank.* This has a movable syphon arm to regulate the discharge and is inherently inaccurate, since any change in the tank inclination causes errors in measurement.

(2) *Vertical tanks* with a central syphoning arrangement were developed to overcome inaccuracies due to changes in inclination, and are normally more satisfactory than the horizontal type.

(3) *Water meters* fitted in the main water supply line to the mixer are not particularly satisfactory, since they are affected by dirt, scale and sediment more than measuring tanks.

Before setting the water gauge on the mixer for the first time, it is essential to check the calibration errors. As much as two gallons in ten have been found with some types of water gauge. Regular attention should be given to the cleanliness of the tank and to the fitting of any new valves or syphoning arrangement.

**Determination of Surface Moisture on the Aggregate.**

Aggregates are usually delivered to the site in a saturated condition, and water drains away gradually after depositing. This results in a saturated layer about 1-2 ft. deep at the bottom of the stock pile. It is advisable to avoid using material from this layer and to be careful that samples for moisture content are not taken near the bottom of the heap. Small differences in moisture content coincide with changes in the grading of the aggregate, especially in the sand. Samples for testing should, therefore, be collected from different parts of the stock pile and mixed. At least three samples should be taken and tested, and the average found. In large hoppers drainage occurs from the bottom. It has been found that this results in a low moisture content at the bottom, becoming wetter towards the middle. Allowance must be made for this by adding rather more water than that indicated by the tests for the first few mixes after any prolonged break.

The surface moisture on the aggregate may be measured on the site by means of the pycnometer, or simply by drying out in a frying pan over a primus. When using the pycnometer method it is necessary to determine the apparent specific gravity of the material from a saturated surface dry sample. This needs careful manipulation, and it is suggested that at least three determinations should be made and the average found. The surface moisture can then be estimated without repeat determinations of the specific gravity unless the source of the material is changed, with the resulting possibility of a difference in specific gravity.

While the pycnometer is useful when no source of heat for drying is available, greater care is needed on the part of the operator than when the determination of moisture content is made by drying. When using the drying method it is easier on the site to determine the percentage of absorbed water and to assume that this remains constant. The total moisture content can then be found by drying the sample of aggregate until no further loss in weight occurs. A simple subtraction gives the surface moisture.

When using 1-2 kg. of aggregate in a frying pan on a primus, the determination of moisture content takes about 10-15 minutes. Care must be taken not to over-heat the aggregate and to prevent any small pieces from jumping out of the pan.

A number of other methods of determining surface moisture have been suggested and various sets of equipment have been put on the market. Many of

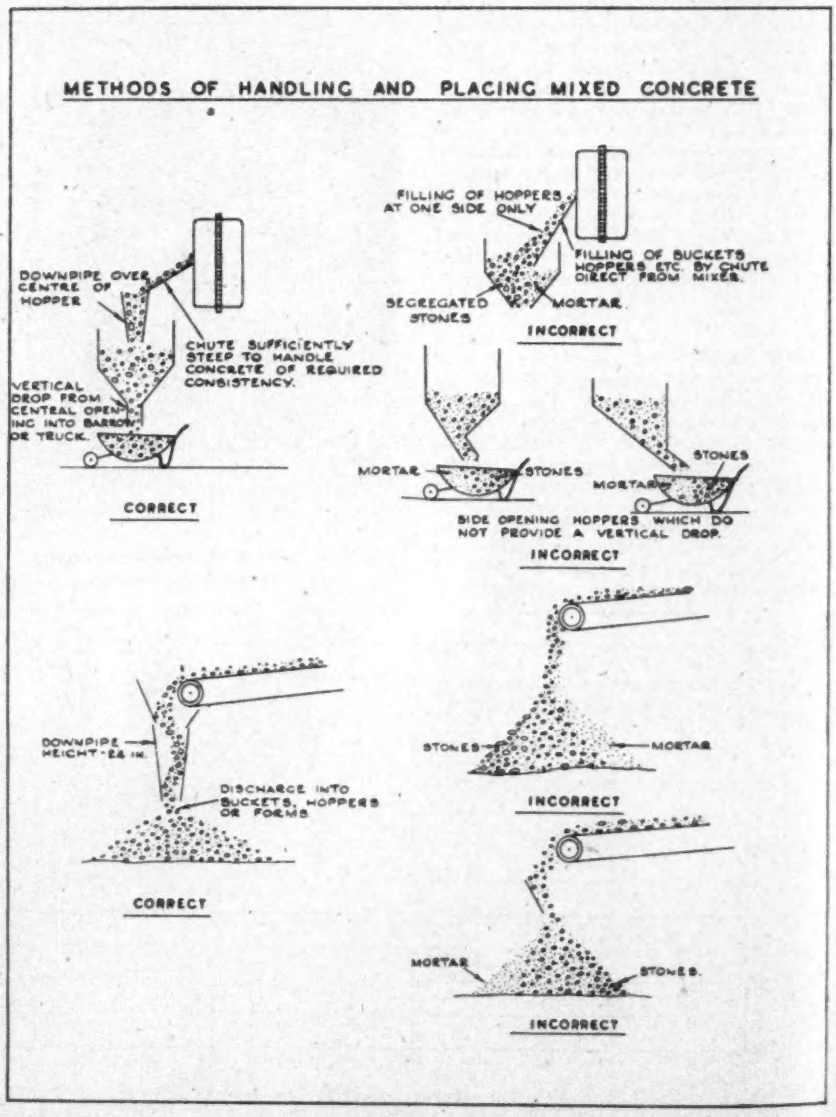



**Fig. 9.**

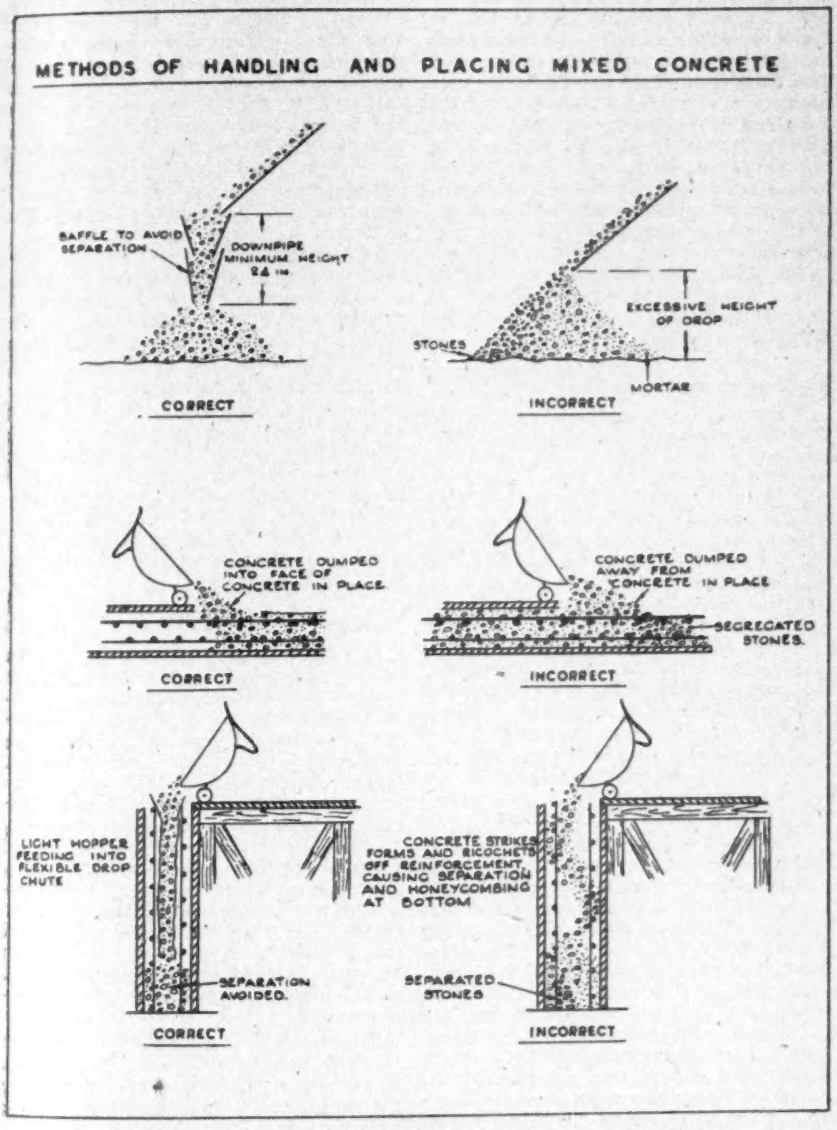



**Fig. 10.**

them are not very accurate and others are less convenient than the methods already described. The methods include: measurement of the change in specific gravity in acetone or a saline solution when mixed with wet aggregate; addition of methylated spirit and ignition to dry off water; use of small tubes on finely balanced scales reading off moisture content directly; a saturation method used in a graduated cylinder; and measurement of the electrical resistivity.

Practical difficulties occur on the site for the various reasons outlined above, but if all precautions are taken it should be possible to maintain the water-cement ratio within the limits ± 0.02. It is suggested, however, that when the quantity of water to be added at the mixer has been estimated, a tolerance of ± 1 gallon in 20 should be allowed to the operator in order to take care of short period changes. While this tolerance may appear a weakness in control, it will be obvious that any control which maintains a water-cement ratio within ± 0.02 will be far more satisfactory than control by visual inspection alone.

**Mixer Efficiency.**

Some attention should be given to the method of filling the loading skip on the mixer, and if the mix discharged is not uniform a different order of filling the materials should be tried. The speed of the mixer should be checked, since mixing efficiency is related to the number of revolutions of the mixing drum, rather than to the length of time the mix is in the mixer.

The mixer should not be loaded beyond its rated capacity, since overloading results in spillage of materials, and less satisfactory mixing. The mixer should be maintained in good condition, and thoroughly cleaned at the end of each spell of mixing. Badly worn and bent blades reduce efficiency and should be replaced.

**Sampling of Concrete for Testing.**

Sampling of concrete for testing should be done with care in order to ensure that the test results are representative. Concrete may not be homogeneous for a number of reasons, such as errors in proportioning, non-uniform mixing, segregation during handling and placing, change of consistency during transport, or loss of moisture from the surface or from absorption by contact with an absorbent material.

Samples should be generally taken as close as possible to the point of final deposit immediately after the concrete has been placed, and before it is compacted.

Occasionally tests for consistency should be made on the same concrete both at the mixer and at the point of placing in order to establish the extent of any loss of workability during transport. Several points are worthy of note—

(1) Samples should not be taken at the beginning or end of a period of concreting without making a special note of the fact.

(2) It is advisable to take samples at irregular intervals and without preparations which are evident to the mixer operator.

(3) Shovelsful of concrete should be taken from each of several points until the quantity is somewhat greater than that required for the preparation of test specimens. This should then be turned over in order to obtain a uniform sample.

(4) Note should be made of the appearance of the mix, including any tendency towards segregation.

(5) A note should be made of the time, the batch number, the mixer from which the concrete was delivered, position in the structure and the temperature.

**Control of Consistency.**

Consistency is normally controlled in the field with the aid of the slump test. This is useful in that—provided the grading of the aggregate, proportioning and the temperature of the materials are reasonably uniform—the slump indicates variations in the water-cement ratio. It should be remembered that the slump may be reduced during transportation of the concrete, and also when the concrete is allowed to stand for ten minutes or so before being placed.

Consistency may also be judged by eye to a fair degree of accuracy, and mixer operators should be encouraged to learn the appearance of concrete having different slumps, so that they can judge the consistency of the concrete as it is being mixed. A further method of estimating the consistency is to watch the shape and appearance of the concrete as deposited in the transport container.

**Segregation.**

Since a close relation exists between segregation and many of the imperfections which occur in concrete construction, such as honeycombing, weak and

TWO COMMON CAUSES OF FAILURE AT EXPANSION JOINTS IN ROAD.

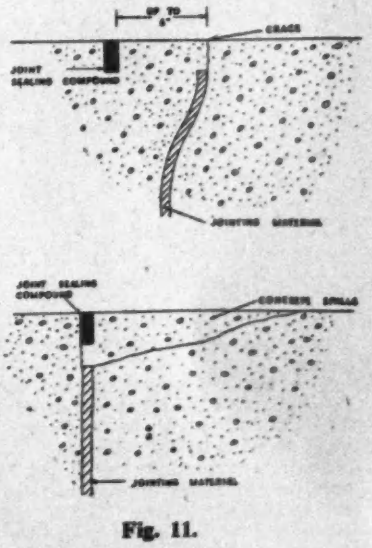



**Fig. 11.**

porous layers, surface scaling and sand streaks, it is useful to be able to judge the tendency for any mix to segregate. A rough test can be performed on the site by means of a slump cone and base plate from a cube mould. For this purpose the cone is held upside down at a height of about 10 in. above a smooth surface and the base plate used to close the bottom as shown in Fig. 7. The cone is filled and then the concrete is dropped quickly by removing the base plate. In general, the most workable concrete forms a heap of approximately hemispherical shape neither very flat nor irregular in outline. Heaps of a flat shape are generally formed by harsh or segregating concrete, while the irregular type is associated with cohesiveness. Types of heaps are shown in Fig. 8.

**Test Cubes.**

The preparation of test cubes from a representative sample of the concrete obtained in the manner already described should be done in accordance with the method laid down in the Code of Practice for Reinforced Concrete. Particular attention should be given to the ramming of the concrete into the moulds, and to protection to prevent premature drying out.

On the site it is not easy to ensure that cubes will not become uncovered, and it is a good plan to take the sample of concrete to the site laboratory or a small shed and make cubes there. They should be covered with a straw mat, several layers of hessian, sand, or other suitable material, thoroughly wetted. As soon as they are "demoulded" they should be immersed in a tank, or failing that, in wet sand. Concrete cubes should not be allowed to dry out from the time they are cast until the time they are tested. They should never be placed near a fire.

A temperature record is essential if early tests are to be used as an indication of concrete quality. Curves have been published showing the effect of temperature on crushing strength, and these may be used in estimating the strength at the temperature of 64 deg. F., which is normally regarded as standard in this country.

Cores are sometimes cut from the finished concrete, but, since it has been found in practice that the average strength of cores is the same as that of cubes made at the time and it is more economical and less damaging to the construction to make cubes, they are not often used.

**Variability in Compressive Strength.**

When using cube strengths as a means to control concrete quality, it is necessary to consider the variations in crushing strength which normally occur. From information collected over a period of years the values given in Table I have been adopted as a basis of control. If cube strengths approach or exceed the limits given, the necessity for inquiry into the results of the variation is indicated. The cube strengths obtained in the preliminary trial mix at a central laboratory are taken as the average for this purpose. Further control is provided by the use of the Gaussian distribution curve which indicates the number of cubes which may be expected to fall within certain ranges of the average strength; for instance, with concrete of average strength, 4,000 lb. per sq. in., and a standard deviation of 500 lb. per sq. in., 70 per cent. of the cubes may be expected to fall between 3,500 and 4,500 lb. per sq. in.

**Supervision and Technique.**

While the tests already mentioned provide a measure of control over proportioning, water-cement ratio and the workability, and also check on the strength of samples of the concrete, they do not ensure a good concrete structure. This depends, in addition and very largely, on the practical knowledge of both the designer and the constructor, as well as on the supervision of the work. It is necessary to see that the formwork is erected correctly, with special attention to the alignment and arrangement of the shuttering panels. The concrete engineer must also see that damage is not incurred during stripping, since patching is not entirely satisfactory. He should also see that the reinforcement is placed in the correct position and that the cover over bars is not reduced by poor fixing.

The handling of the concrete should be inspected to ensure that there is not an excessive loss of water by evaporation, that segregation does not occur, and that trunkings are used if the fall from the point of deposition is large. Suggested methods for controlling the fall of concrete are given in Figs. 9 and 10, which are based on the recommended practice published by the American Concrete Institute. The concrete should be placed evenly and should be consolidated uniformly. The concrete engineer must see that the workability of the mix is satisfactory for the method of consolidation in use. Special care is necessary if vibratory methods of placing are used, to avoid segregation, sand streaks, movement of shuttering and other troubles.

Construction joints are of considerable importance and have been the cause of many unsatisfactory concrete structures. The concrete engineer should pay special attention to the cleanliness of the old concrete and to the removal of laitance, and should insist that a layer of cement mortar is placed before the new concrete is added. Construction joints should be horizontal, and concrete should not be allowed to find its own level due to the omission of vertical stop boards. Expansion joints in roads should likewise receive special care in order to avoid the troubles indicated in Fig. 11. A method which has been found successful is to place a short length of concrete between transverse forms, and with the jointing material against one form, a short distance ahead of the general concreting. The concrete adjacent to the joint thus has a chance to stiffen somewhat, and the verticality of the joint is preserved when the general concreting is done. No loss of strength in the partly stiffened concrete or weak plane between this and the fresh concrete occurs.

Considerable ingenuity may be required in arranging an economical method of curing different parts of a structure. The concrete engineer is likely, in addition, to be encumbered with opposition on the grounds of economy and interference with other works. In cool weather decisions must be made when to stop and when to start concreting, and what protective measures are necessary.

**Workmanship.**

In concrete construction as in all other crafts—and concreting is a craft—it is not enough for the concrete engineer to supervise and criticise the work without justifying his comments or attempting to educate the foreman, gangers and workmen. Quality of workmanship is one of the most important factors in the production of good concrete structures, and the key to good workmanship is knowledge and an interest in the work being done. Most workmen are keen to do a job well, subject to the conflicting interest of speed (since this affects their earnings), and if the reasons for doing a job in a certain way are explained to them they will often make an effort to follow out the suggestions made.

The concrete engineer must therefore learn to deal tactfully and to encourage an interest in improvements of method by the men actually making and placing the concrete. He must also see that the quality of the work complies with the requirements of the particular purpose for which it was intended, while studying economy and the smooth progress of the work. The concrete engineer must bear in mind that he is responsible for maintaining a reasonable and uniform standard of concrete quality, while in the interests of economy it is obviously unnecessary to produce concrete having a crushing strength far in excess of that required.

TABLE I—VARIATIONS IN CRUSHING STRENGTHS OF SITE-MADE CUBES

| *Conditions* | *Coefficient of variation per cent. (approx.)* | *Percentage variation from average strength (not more than 1 cube in 100 defective)* | *Percentage variation from average strength (not more than 1 cube in 50 defective)* |
|---|---|---|---|
| (1) Volume batching of all materials. Poor control | 25 | ±60 | ±53 |
| (2) Volume batching of aggregates. Cement by weight. Alternatively continuous mixers. Control of consistency by slump only | 19 | ±45 | ±40 |
| (3) Weigh batching of all materials. Control of water cement ratio within ±0.03, by tests on aggregates for moisture content and by slump | 10 | ±25 | ±21 |

ACKNOWLEDGMENTS.

The lecture is largely based on the Author's experience in concrete control with Messrs. George Wimpey and Co., Ltd., to whom he is indebted for permission to publish data and various illustrations. The Author also acknowledges permission of the American Concrete Institute to use their diagrams as a basis for Figs. 2, 3, 9 and 10.

**Copper in Housing.**

A new exhibit, illustrating the uses of copper in building, has been installed at the Building Centre, 9, Conduit-street, W.1, by the Copper Development Association. The exhibit, which is contained in a case designed by Mr. John Grey, F.R.I.B.A., A.A.Dip., N.R.D., is divided into three sections dealing respectively with tubes and fittings, architectural metalwork and sheet and strip.

# TIMBER PROBLEMS

## A BRAINS TRUST

A BRAINS TRUST meeting organised by the Timber Development Association was held on February 24 in the Pump Room at Bath. The team included Mr. H. A. Cox, M.A., and Mr. E. H. Nevard, B.Sc., representing the Forest Products Research Laboratory, and Mr. E. H. B. Boulton, M.C., M.A., and Mr. Phillip O. Reece, A.M.I.C.E., M.I.Struct.E. The question-master was Mr. G. W. Grosvenor, President of the South-Western Federation of Building Trades Employers.

Following are extracts from the answers to some of the questions:—

QUESTION.—Why are the timbers in old churches, etc., so often attacked by the death watch beetle and what can be done in such places to preserve the timber against this attack?

MR. COX: When a building is attacked it usually turns out, on examination, to have suffered at some time or other from moisture entering the building, maybe in a wall plate or from a leaking lead roof. The moisture gets in and decay commences because it does not rapidly dry out. Now that is the sort of place where the attack of the death watch beetle begins—at some place in the timber where decay has already started. If buildings were perfect, that is to say, the timber were properly seasoned before it went in, the walls were waterproof and the roof was waterproof, there would not be any death watch attack in buildings, but unfortunately, no matter how careful the builder is, it is very difficult to keep the whole of a big building under observation all the time. So it often happens that a downpipe which carries away the water gets blocked, overflows at the top, saturates the wall plate and then, before this can dry out properly, the spores of fungi which are always floating about in the air begin to germinate in the wood and start decay, and so prepare the way for the death watch beetle.

With regard to the remedies to be applied, it depends very largely on the building itself. If it is a small place it can be dealt with by fumigating. It is a job for an expert because the gases which are used are highly poisonous, but of recent years there have been proprietary articles on the market which can be used to treat the timbers, and if the attack has not gone very far they are extremely effective—not by one application, but several, preferably at intervals of at least six months. If they are properly applied and used they are effective in checking the spread of the damage.

MR. NEVARD: An interesting point is that in churches in particular, where the main structural timbers are usually of oak, quite often the roof boarding is a softwood and there a little second cousin of the death watch beetle comes in—the furniture beetle. In most cases where the furniture beetle has started an attack in softwood boarding, examination has revealed that in the course of its life it has eaten out through the lead. This has been one source of moisture to start an attack in softwood boarding and, later on, in the oak. Unfortunately in most of the historic buildings where oak occurs, the oak is used as structural members and more often than not by the time the attack has been realised the structural members have been found to have been very badly eaten away. Unfortunately there is only one real remedy, and that is to cut out the attacked timber and replace it with new timber, preferably, of course, treating the timber with some preservative.

MR. BOULTON: Many of the oak beams in old churches and abbeys like Westminster and York Minster had a certain amount of sapwood; and this is more likely to be attacked by the death watch beetle than the actual heartwood of oak. The reason why these beams are attacked is that the female beetle, in April, May and June, flies into the buildings and proceeds to lay her eggs on either the sapwood or any rough, chipped portion of these old beams; it is because these beetles have wings and can fly and lay eggs that the beams are attacked.

### Stress Grading of Timber.

QUESTION.—How is it possible to stress grade timber in the same way as iron or steel when timber is a natural commodity?

MR. REECE: The strength of timber is governed almost entirely by visible characteristics such as knots, shakes, slope of grain, and so on. The most important of these characteristics is knots, and by measuring the size of the knot in relation to the width of the piece in which it occurs you can make an assessment of the strength of the piece. For instance, in, say, Baltic redwood, you have a 2-in. joist. A 1-in. knot in the edge means, in effect, that you can stress that joist up to 800 lb. per sq. in. A ½-in. knot means that you have more clear wood there undisturbed by the grain running round it and you can stress it up to 1,200 lb. per sq. in. It is simply a matter of measuring knots you can see in the wood. There is one other property which affects the strength of timber and that is its density; it is easy enough to determine, but it is not of the first importance if the timber has already been specified. Once you have specified the wood to be used it is then simply a matter of knots, slope of grain, checks, shakes and wane, measured in proportion to the piece of timber. The actual proportions which are permitted for any grade of timber are laid down in British Standards 940 which gives all the rules for measurement.

MR. NEVARD: There is another point in connection with stress grading in that it is always possible to measure minute stresses in the laboratory. In practice it would not be possible to do so unless the extra cost could be balanced by the cost of construction. We have an example of this in the construction of aeroplanes—an aeroplane costs some twenty thousand pounds or more, and there the constructors stress grade the timber to carry special strains, but they do not take in any knots because the first criterion is that there should be no knots.

With structural timber for houses the stress grading rules must be simple and easy to apply by anyone with average intelligence. I think the rules which are applicable in this country come within that category. But please do not think that these are the first stress grade rules ever formed. America has had them for many years. Again, please don't think that the stress grading rules as applied to Baltic redwood are going to upset all the timber trade. You will find that if you take an average parcel of unsorted timber there may be only one or two pieces to be thrown out, but on the other hand you may find also that the majority of them would come in to an 800-lb. grade. The rules must be simple and easy to apply, be economic and not too disturbing to the timber trade.

# HOUSING AND INCENTIVES

A CIRCULAR letter asking for details of bonus schemes in operation has been sent to members of the Council and District Secretaries of the Institution of Municipal Engineers. The following table and comments, which appear in the current issue of the Institution's *Journal*, give an analysis of the main points covered:—

| | |
|---|---|
| Number of replies received ... ... | 44 |
| Those in favour of a bonus scheme | 20 |
| Those not in favour of a bonus scheme ... ... ... ... | 11 |
| Those who have no experience of bonus schemes ... ... ... | 13 |
| Bonus schemes in operation by contractors ... ... ... | 14 |
| Bonus schemes in operation or contemplated by local authorities ... | 6 |

The following typical comments for and against the introduction of bonus schemes have been selected from among the replies received:—

"The men have been earning up to 25s. per week extra and a corresponding increase has resulted."

"The target level at 357 hours was set for a piece of work—mainly brickwork—and the time taken was 277 hours."

"There is a grave danger of sloppy workmanship."

"With work such as brickwork the bonus should be calculated for the whole of the work, otherwise the bricklayer might concentrate on the straight walling up to the cill height and tend to slacken off above this height."

"It is noted that whilst output tends to increase, quality tends to decrease."

"Unless a bonus was paid it was found that the output was 350 bricks per day, but increased during one week to 1,200 bricks per day on payment of bonus."

"The introduction of a bonus would increase considerably the amount of supervision and clerical work, and this again would add to the cost of the work."

"The introduction of a bonus scheme has already brought about a lower standard of work."

# BRITISH TRANSPORT COMMISSION

## ORGANISATION OF ROAD TRANSPORT EXECUTIVE

SIR CYRIL HURCOMB, Chairman of the British Transport Commission, announced on March 10 developments in the organisation of the Road Transport Executive, which was formed at the end of January with Major-General G. N. Russell as Chairman.

While, as in the case of other Executives, the Executive as a whole will be responsible for the activities entrusted to them, individual whole-time members will be responsible for particular functions as follows: Mr. Claud Barrington, freight traffic; Mr. George Cardwell, passenger traffic; Mr. Barrington and Mr. Cardwell, engineering; Mr. Harold E. Clay, establishment, staff and welfare; Mr. Archibald Henderson, organisation, development, research. A committee of Executive members will deal with stores. The part-time members, Mr. W. Beckett, Mr. Henry Dutfield and Mr. Percy J. R. Tapp, while sharing in the collective responsibility of the Executive, will assist the whole-time members in matters on which their special experience and knowledge can best be brought to bear. The Chairman will be responsible for co-ordinating the work of the Executive and will give special attention to the relationship between road and rail services.

**Immediate Tasks of Executive.**

In due course a Scheme of Delegation will be made entrusting to the Executive the management and operation of the haulage undertakings to be acquired under the provisions of the Transport Act, 1947.

For the time being the position in regard to road haulage is different from that which arose on January 1 in connection with the railways, the canals and London Transport, where undertakings passed forthwith into the ownership of the British Transport Commission and the delegation of actual management and operation of the respective undertakings to the appropriate Executive became immediately effective. In this case the acquisition of the haulage undertakings as a whole cannot be immediately carried through and several months at least must be occupied in the negotiations and other preliminaries involved in bringing Part III of the Act into full operation. Meanwhile, the Commission proposes to delegate to the Executive its functions under the provisions of Part III, but any agreement as to the amount of compensation payable in respect of the transfer by the Act of any undertaking to the Commission will need the special authorisation of the Commission itself.

The Commission already own some important road transport undertakings engaged in the carriage of goods, which have either passed to them with the business of the railway companies, or have since been acquired under special provisions of the Act of 1947, including Pickfords and Carter Paterson and their subsidiaries, Wordie and Company in Scotland, transport services. These undertakings are, for the present, being managed as separate units, but their Boards have been reconstituted, and made responsible to the Commission. The reconstituted Boards now include members or other representatives of the Road Transport Executive, and in some instances a financial representative of the Commission. The co-ordination of these undertakings with one another, and eventually the fitting of them into their proper place as the remaining undertakings come to be acquired will be worked out in detail over the next few months as the divisional organisation of the Executive takes shape.

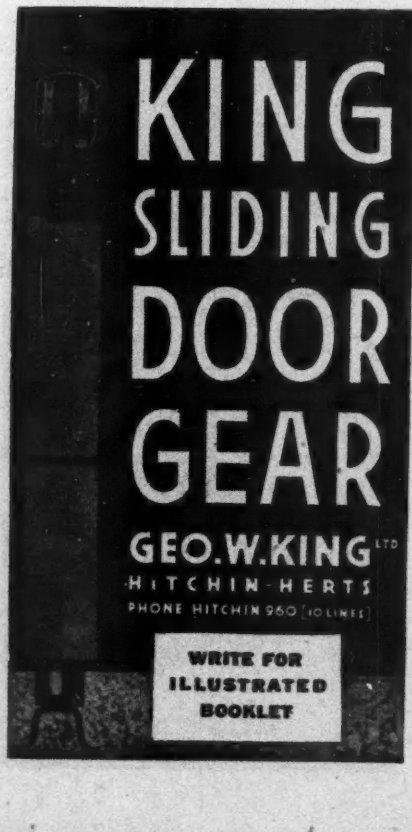
The collection and delivery services now performed direct by the railways' own vehicles form a special and important problem of co-ordination, which will be examined through the machinery of the two Executives.

It is commonly known that negotiations are in progress with certain other undertakings for voluntary acquisition, but it would not be right to disclose particulars of these negotiations until they have been completed.

**Decentralisation.**

To meet the position which will arise as the haulage undertakings generally pass into the possession of the Commission and under the management and operation of the Executive, a divisional organisation will be set up throughout the country. There will probably be from ten to twelve such divisions, each under a Chief Divisional Officer, who will be responsible for the operation of the road haulage services in his division, subject to such limits of authority as may be defined. He will be responsible for dealing with all commercial questions and for the general administration of the division, including the control of its staff. In technical matters such as engineering, departmental officers in the divisions will comply with such instructions as may be issued from Executive headquarters to secure uniform practice and technical standardisation where that is desirable. Such instructions will be communicated to the Divisional Chief Officer, who will be charged with the duty of securing the efficiency and economical operation of his division. These Chief Divisional Officers will provide the points of contact with the Regional or Divisional Officers of the other Executives and will maintain the closest possible contact with the commercial and industrial users of road transport. For the same purposes, the organisation will be carried down into the districts, which will form sub-divisions of each division.

The headquarters of the Road Transport Executive are: St. Pancras Chambers, Euston-road, London, N.W.1.




# IN PARLIAMENT

**Rent Restriction.**

MR. SKINNARD asked the Minister of Health whether, in view of hardships imposed on many small property owners in humble circumstances, he would consider amending the Rent Restriction Acts to bring the rentals charged into relation with the present costs of maintenance and so put private owners in the same position as local authorities who might so increase rentals.

MR. BEVAN said he could hold out no prospect of early legislation to effect the amendment of the Rent Restrictions Acts.

**Repair Costs.**

MR. CHANNON asked the Minister of Health whether he would consider setting up a technical committee on the lines recommended by the Ridley Report on Rent Restriction to inquire and report on the cost of repairs and the burdens imposed on many owners of small property for whom the cost of repairs often exceeded the rent they obtained.

MR. BEVAN said that the appointment of a technical committee at this stage was not part of the Ridley Committee's proposals.

**Housing Societies' Rents.**

COLONEL CLARKE asked the Minister of Health if he would consider granting to housing societies the same facilities for increasing rents as were at present granted to local authorities.

MR. BEVAN said that the point would be borne in mind when it was possible to consider comprehensive legislation dealing with rent restriction.

**Brick Stocks.**

SIR FRANK SANDERSON asked the Minister of Works whether he was aware of the piling up of bricks, owing to lack of demand resulting from the curtailed building programme; and if he would remove the restrictions and permit private enterprise in the building of houses to function, with a view to removing the problem of over-production of bricks.

MR. KEY said that the answer to the first part of the question was in the affirmative. The second part of the question was for the Minister of Health, but in considering it account had to be taken of other factors besides the supply of bricks.

**Wooden Houses.**

MR. VANE asked the President of the Board of Trade whether any representative of his department visited the Export Exhibition in Munich in the autumn of 1947 to examine particulars of the several types of wooden houses on exhibition with a view to seeing if they were suitable for erection in this country.

MR. H. WILSON said a representative of his department visited the Exhibition, but not specifically with a view to examining the suitability of German prefabricated houses for erection in this country, which was a matter for the Minister of Health. Particulars of the houses concerned were, however, passed to the responsible department, but he understood they were considered unsuitable.

# NEED FOR A BALANCED INDUSTRY

### DANGER AHEAD IF YOUNG CRAFTSMEN ARE LOST

A WARNING to the Government that if the building industry is deprived of its younger craftsmen or its labourers in any appreciable numbers, or is prevented from training apprentices, it will be seriously handicapped for several years to come, was given by MR. F. M. SLEEMAN, of Exeter, President of the National Federation of Building Trades Employers, in a speech at the annual meeting of the Birmingham Association on Tuesday morning.

"It is just as important," said Mr. Sleeman, "to the building industry to have a balanced force as it was to Field-Marshal Montgomery to have a balanced army, and I hope the Government will realise this before it makes any big cuts in the building industry. The suggestion in the Government's latest White Paper that the building and civil engineering industries may have to suffer a reduction of 12 per cent. of their labour force would drastically unbalance the industry, and so very materially affect the speed with which we can rebuild our homes and factories after the crisis has passed."

# PRODUCTION IN BUILDING

### NEED FOR DEVOLVED AUTHORITY

SPEAKING to the Federation of Master Builders at Brighton on Monday, the Rt. Hon. OLIVER LYTTELTON, D.S.O., M.P., said that the output per man-hour in the building industry was lower than it was before the war—mainly because the industry was subject to so many artificial restrictions.

"All over the country," said Mr. Lyttelton, "there are building activities which are disastrously out of phase. This springs from over centralisation in an industry which, from its very nature, must be much more widely spread than any other. Builders have to carry on production in hundreds and thousands of different places. Therefore, organisation in the building trade must be devolved to the greatest possible extent. Yet centralisation by the Government on the local authorities, licences and permits dependent upon the Ministry of Health, or the Ministry of Works, or the Ministry of Supply, or the Ministry of Labour from Whitehall, is the rule.

"Whilst the Government say that we are devoting too much of our resources to building, we are certainly making, through wasteful use of them, far too little contribution to meeting the crying need for housing. We all know that production in any industry ought to be kept at a smooth and steadily rising curve in these days. Instead of which, from the faults of central planning, many industries have to go forward with jerks. One day they are urged to make haste, the next day they are stopped by lack of licence or raw materials."

### BOOKS RECEIVED

VENTILATION AND AIR CONDITIONING. By E. L. Joselin, A.C.G.I., A.M.I.C.E. (London: Edward Arnold and Co.) Price, 21s. net.

CORNERSTONE. By David Hall. (London: Lawrence and Wishart.) Price, 7s. 6d.

ARCHITECTS' TECHNICAL REFERENCE. (London: The Rolls House Publishing Co., Ltd.) Price, 25s.

# CURTAILMENT OF BUILDING

### "NOT SO SEVERE AS FORESHADOWED," SAYS MR. KEY

CURTAILMENT of building activities, it is anticipated, will not be as severe as was foreshadowed in the recent Government White Paper, the Minister of Works, the Rt. Hon. C. W. KEY, stated to a deputation from the English Joinery Manufacturers' Association.

This is revealed in a memorandum circulated this week to all members of the Association, which states that the deputation discussed present and impending unemployment in the joinery trade and fears that unemployment might be aggravated by the imports of joinery and doors from Finland under the recently concluded Government trade agreement with Finland.

"The Minister was extremely sympathetic towards the points raised, and I can state that it is not anticipated that the general level of the building trade activities as a whole will be as severely curtailed as was feared from the Government White Paper; also, that if any joinery and doors are imported as a necessary part of the trade agreement in exchange for other commodities, any such imports of joinery and doors will be subject in this country to the ordinary conditions with regard to timber licences," stated Mr. R. G. Harvey Greenham, Secretary of the Association.

## BUILDERS' HOLIDAYS

### Bank Holiday Saturdays.

The Saturdays before Easter, Whitsun and August bank holiday are in future to be regarded as normal working days by the building industry in London, with the proviso that "any proposal to close shops or jobs on these days shall be decided, after prior consultation in the shop or on the job, by a simple majority of the operatives concerned." This is the decision of the London Regional Joint Committee, the London branch of the National Joint Council for the Building Industry, which consists of the London Master Builders' Association, representing the employers, and the London Region of the National Federation of Building Trades Operatives.

# WRONGFUL DISMISSAL OF BRICKLAYERS

### COUNTY COURT CASE

Two Dorking bricklayers were the plaintiffs in a successful action at Dorking County Court on March 11, when they claimed damages for wrongful dismissal against their former employer, Mr. William Robinson, Lower-road, Great Bookham, Surrey. The plaintiffs were Mr. Norman Strudwick, Jasmine Cottages, Pixham-lane, Dorking, and Mr. Hugh Bellis, 34, Parkway, Dorking. They were each awarded £3, being the amount of wages due to them, and costs were awarded in Mr. Strudwick's case on scale A, the highest scale. Judge Clothier, K.C., stated that it was a case involving a difficult question of law. As the evidence in both cases was the same, Mr. Bellis's was not heard separately and lower costs were awarded. A counter claim for slander was abandoned.

The case for the plaintiffs was that they were employed on an hourly basis pursuant to the National Working Rules which provided that, except in cases of misconduct, notice of dismissal could terminate only at the end of normal working time on Friday. Both Bellis and Strudwick were dismissed summarily on a Tuesday in January last year after they had refused to work on piece rates. Evidence for the defendant, given by his foreman, Mr. Arthur Boothman, Boscombe-road, Worcester Park, was that the men pursued a "go slow" policy because the firm's licensed work was nearly finished. In one day the gang of six bricklayers, which included a grocer's assistant, a scaffolder and an apprentice, laid only 200 bricks. After telephoning the national service officers at Epsom and Leatherhead to ascertain that there had been no change in the working rule regarding misconduct, witness discharged the men for refusing to work. He said the men did not object to piece-work, but wanted to have the piece-work contract themselves instead of working for a sub-contractor. In cross-examination, he admitted that before a joint committee of the employers' federation he said he consulted the national service officers because the men were not prepared to join the piece-work gang.

Giving judgment, his honour said it was quite impossible for him to decide that there had been dereliction of duty sufficient to justify dismissal. The whole job was run on piece rates. If Mr. Boothman's statement about consulting the national service officers was true, it was he who was seeking piece rates and was determined to dismiss the plaintiffs. It was a very remarkable anticipation to consult not one, but two, national service officers to see if a rule which had existed since the time of Magna Carta had been altered recently. "I sympathise very largely with Mr. Boothman in his desire to get rid of these men who would not join the piece-rate method of payment," he said.

### Memorial Garden Proposed, South Bank.

THE London County Council is recommended by its appropriate committees that a scheme be prepared, in collaboration with Dr. C. H. Holden, F.R.I.B.A., for the siting of a memorial garden, with a suitable focal point, in one of the riverside open spaces contemplated on the South Bank between County Hall and Waterloo Bridge. The intention is that the garden shall be a memorial to Londoners who met their death in the defence of their City and Empire during the war.

# NEWS ITEMS

**Chairman Elected.**

Mr. F. H. Champion, public relations officer to the Building Societies Association, has been elected chairman of the Newspaper Press Fund.

**The late Mr. Cecil Ray.**

We announce with regret the sudden death, at the age of 61, of Mr. Cecil Ray, the chief estimator of Higgs and Hill, Ltd., with whom he had been for 40 years. Many architects and quantity surveyors will remember him for his wide knowledge of estimating and surveying.

**New Rules for Travellers' Schools.**

A special court of governors of the Royal Commercial Travellers' Schools was held at St. Ermins, Caxton-street, S.W.1, on February 21, when proposed new rules were passed. These embraced provision for the admission of sons and daughters of commercial travellers on a contributory basis, subject to priority being given to the orphaned and necessitous children of commercial travellers on a non-contributory basis, as obtained under the old rules. The proposed rules will now have to be presented to the High Court for consideration.

**Price Standstill Orders.**

Price standstill orders have been made by the Board of Trade, in consultation with the Central Prices Regulation Committee, affecting the following building industry goods: Electric wire and flex of a kind used for office or domestic purposes; paint and distemper, stain, varnish and lacquer; nails, screws, nuts, bolts, washers and rivets; articles of hardware and ironmongery for domestic or office use (the fixing of which is normally undertaken by trade craftsmen), component parts thereof and accessories therefor.

**Evidence Invited.**

The Traders' Road Transport Association is perturbed at the repeated assertions that goods vehicle operators, including those holding "C" licences, are failing to comply to the full with the conditions attaching to their licences. In the case of "C" licensed vehicles the assertions are that a number of such vehicles are being used illegally to carry goods for hire or reward. So far no evidence has been secured by the T.R.T.A. that such infringements are taking place, and anyone who can produce such evidence is invited to send it to the secretary of the Association at 146, New Bond-street, W.1, when the matter will be fully investigated and appropriate action taken.

**Road Research.**

"Road Note No. 4—Design of Concrete Mixes," recently published for the Department of Scientific and Industrial Research by H.M. Stationery Office, price 4d., by post 5d., makes practical use of information given in a previous report ("Road Research Technical Paper No. 5—The Grading of Aggregates and Workability of Concrete," H.M.S.O., price 1s. 6d., by post 1s. 8d.) on the effect of aggregate type and grading on the workability and strength of concrete. A method is described of determining what concrete mix properties are required to produce, with given materials and under given works conditions, a concrete of the designed minimum cube-strength. The method has been evolved from a large number of tests carried out at the Road Research Laboratory, and it is hoped that it will enable engineers to design their concrete mixes with greater precision than has been possible in the past.

**Appointment of P.R.O.**

Mr. Paul Reilly will join the Council of Industrial Design at the end of March as public relations officer in charge of promotion and publicity. He will be assisted by Mr. Ronald D. Amos, Press officer, and Mrs. Rosetta Desbrow, assistant Press officer.

**Engineers' Year Book.**

A reference to the year book of the Institution of Structural Engineers, 11, Upper Belgrave-street, S.W.1, in our issue of March 12, wrongly stated that the price of this book to non-members was 2s. 6d. It is, in fact, 3s. 6d., or 3s. 10d. post free.

# TRADE NEWS

**Change of Address.**

Messrs. Robert Boyle and Sons, ventilating engineers, have moved from their offices at Adelphi, W.C.2, to 98, Herries-street, W.10.

**Jubilee Bulletin.**

"Fifty Years of Enterprise and Success" is the title of the jubilee number of the bi-monthly news bulletin published by Broom and Wade, Ltd., High Wycombe, manufacturers of air compressors and pneumatic tools. Tribute is paid in this edition to Mr. H. S. Broom, chairman and managing director, who founded the company in 1898.

**Aluminium Tests.**

Extensive tests carried out by the Birmingham Aluminium Casting Co., Ltd., Birmid Works, Smethwick, Birmingham, are described in a brochure on "Birmid Rainwater Goods" recently published. The company claim that the results of these experiments provide evidence which indicates the superiority of aluminium alloy for rainwater goods. In addition, details are given of rain-water heads, half-round gutters and fittings, O.G. gutters and fittings, down pipes, bends, branches, etc., which are manufactured by the firm.

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*ENGLAND'S LARGEST GLAZING CONTRACTORS*

**Students Visit Joinery Works.**

According to Sharp Bros. and Knight, Ltd., of Burton-on-Trent, recent visits to their works by schoolboys have led to many scholars showing a keen interest in entering the joinery industry on leaving school. Students of the Burton School of Arts and Crafts also visited the works recently and learned something of the materials and processes they use.

# THE SCOTTISH BUILDER

## NEW BUILDINGS

**Bishopbriggs.**—New buildings, etc., for block-making plant, for which designs have been prepared by the contractors, Melville, Dundas & Whitson, Ltd., Glasgow.

**Dykehead.**—New bakery at Shottishead-rd., for which the architect is A. Reid, 199, Shottiskirk-rd., Shotts.

**Glasgow.**—New building proposed for Pieters & Co. (Glasgow), Ltd., at Milnbank-st., for which the architects are Forbes, Campbell & Partners, 307, West George-st., Glasgow.

**Glasgow.**—Alterations and additions for Clydesdale Cabinet Works, Ltd., for which the architect is J. Reid, 79, West Regent-st., Glasgow.

**Lanarkshire.**—New workshops and offices, etc., for the Clyde Foam Works, for which the designs have been prepared by Holland & Hannen and Cubitts, 13, Dartmouth-st., Westminster, London.

# FUTURE CONSTRUCTION

## PUBLIC APPOINTMENTS

*Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.*

## CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

### BUILDING

**MARCH 23.**

†***Crosby T.C.**—3 pairs of houses at De Villiers-ave., Crosby, and 16 houses off Lathom-ave., Seaforth. J. R. Fothergill, A.M.I.C.E., B.E. & S., Town Hall. Dep. £2 2s.

**MARCH 25.**

†***Hampshire Police Authority.**—3 police houses at Orchard-way, Aldershot, 4 at Police Station, Eastleigh, and 3 at Alma-rd., Romsey. County A., The Castle, Winchester. Dep. £1 1s. in each case.

**MARCH 26.**

†***Ledbury R.D.C.**—(1) 3 pairs of houses at Mathon; (2) 4 pairs of houses at Bosbury. F. E. C. Davoll, Architect, 8, St. Mary's-st., Ross-on-Wye. Dep. £2 2s. Tenders by April 13.

**MARCH 27.**

†***Essex C.C.**—Erection of hutment at Braintree St. Michael's Hospital (est. cost £1,800). County A., County Hall, Chelmsford.

†**Pateley Bridge R.D.C.**—24 Airey houses with appurtenant works at 2 sites. J. H. Armitage, C., Council Offices.

**MARCH 29.**

**Sunderland C.B.**—8 shops and flats at Thorney-close estate. B.E., 27, Fawcett-st. Dep. £2 2s.

**MARCH 30.**

**Beckenham T.C.**—Repairs to houses at Elmers-end estate. B.E. and S. Dep. £2.

**Stevenage U.D.C.**—24 houses at Grey Dells-rd. Geoffrey V. Berry, C., Council Offices. Dep. £2.

**MARCH 31.**

†***Barking T.C.**—73 houses at Mayesbrook Park estate. Boro' A. Dep. £2 2s.

**Clutton R.D.C.**—12 Airey houses at Paulton. Thomas and Morgan & Partners, 23, Gelliwastad-rd., Pontypridd. Dep. £3 3s.

***Devizes R.D.C.**—12 Airey houses, with roads and sewers, at Rowde; 12 Airey houses, with roads and sewers, at West Lavington. Pictor, Snailum and Huggins (F. and A.), Abbey-chbrs., Bath. Dep. £2 2s.

†***Friern Barnet U.D.C.**—18 flats at Colney Hatch-la. C., Town Hall. Dep. £2 2s. Tenders by April 21.

***Glanford Brigg R.D.C.**—6 houses at Goxhill, Lincs. Buttrick & Buttrick (F. & A.), 43, Oswald-rd., Scunthorpe. Dep. £2.

†***Isle of Wight C.C.**—Superstructures of

buildings and completion and site works and services at Engineering Section, County Technical College, Newport. Sydney Gregson (F.), County A., County Hall, Newport, I. of W. Dep. £10 10s. Tenders by May 18. (Applications should be accompanied by two persons for reference.)

†**Norfolk E.C.**—Extensive work at Sidestrand Hall for use as boarding school. F. G. Limmer (F.), Ed. Architect, Stracey-rd., Norwich. Dep. £5 5s.

†**Oswestry R.D.C.**—20 Airey houses and roadworks at Greenfields, St. Martins. S., Council Offices. Dep. £2 2s.

**Shoreditch B.C.**—Erection of one-storey public wash-house addition at Haggerston Baths. Boro' A. and S., Town Hall. Dep. £3 3s.

**Thornton Cleveleys U.D.C.**—Motor house and pumping station at junction of Westmorland-ave. and Cleveleys-ave. E. and S. Dep. £1 1s.

**Warminster U.D.C.**—16 houses with roads and sewers at Hillwood. Pictor, Snailum and Huggins (F. and A.), Abbey-chbrs., Bath. Dep. £2 2s.

### APRIL 1.

**Barrow-in-Furness C.B.**—124 houses at Newbarns (South) estate. B.E. and S. Dep. £2 2s.

**Manchester T.C.**—Classrooms, etc., at St. Clare's Voluntary R.C. Primary School, Victoria-ave., Higher Blackley. City A. Dep. £1 1s.

### APRIL 2.

**Cornwall C.C.**—Additional classrooms at Newquay County Primary School, Crantock-st. S. Pool, County A., Truro. Dep. £1 1s.

**Kirkby-in-Ashfield U.D.C.**—(a) 26 houses at Skegby-rd. estate; (b) 14 houses at Greenwood-dr. estate. B. W. Bostock, E.S. & Housing A., Public Offices. Dep. £2 2s.

†**Whitby U.D.C.**—Contract No. 132. Roads and sewers at The Ropery, Green-la.; Contract No. 133, sewers and site works at Abbeville-ave.; Contract No. 134, 5 pairs of Airey houses at Abbeville-ave.; Contract No. 135, conversion of cleansing station into bungalows. E. & S., Council Offices. Dep. £2 2s. (cheque only) each contract.

### APRIL 3.

*Bath T.C.—Conversion of No. 11, Royal-cres., into flats. T.C., Guildhall. Dep. £2 2s.

*Beds. C.C.—Alterations to kitchen and provision of new scullery and additional lavatory accommodation at Bedfordshire Sanatorium, Mogerhanger Park. County A., Shire Hall, Bedford. Dep. £2 2s.

**Chapel-en-le-Frith R.D.C.**—6 houses at Cote-la., Hayfield, and 4 at Belgrave-ave., Chinley. Pendleton and Dickinson, architects, 16, Brazennose-st., Manchester 2. Dep. £2 2s.

**Doncaster T.C.**—Demolitions, alterations and erection of additional wings at High Melton Hall for conversion into teachers' training college. W. W. Thomas, Ed. Architect, Wood-st. Dep. £2 2s.

**Kingsclere and Whitchurch R.D.C.**—3 pairs of houses, with drainage and external services, at site No. 44, Kingsclere; 2 pairs of houses, with drainage and external services, at site No. 54, Ecchinswell. F. Henshaw (F.), Westminster Bank-chbrs., Andover, Hants. Dep. £2 2s.

### APRIL 5.

**Chepstow R.D.C.**—8 houses at 2 sites, with roads and sewers. Thomas and Morgan and Partners, 23, Gelliwastad-rd., Pontypridd. Dep. £3 3s.

**Hereford T.C.**—Nine blocks of Duplex houses at Hunderton estate. T.C. Dep. £2 2s.

**Ince-in-Makerfield U.D.C.**—30 houses at Petticoat-la. R. Lewis, B.Sc., E. & S., Town Hall. Dep. £2 2s.

**Maidenhead T.C.**—8 pairs of houses at Pinkneys-rd. estate. B.E. and S., 17, Craufurd-rise. Dep. £2 2s.

**Newhaven U.D.C.**—10 houses at Meeching estate. A. E. Motyer, E. & S., Council Offices. Dep. £2 2s.

*Salford T.C.—8 houses at Eccles Old-rd. City E.

†*Shoreditch B.C.—Seven-storey block of flats at Murray-gr. Boro' A. & S., Town Hall. Dep. £10. Tenders by April 27.

### APRIL 6.

**Bradford T.C.**—Boiler house building for Nos. 1 and 2 boilers at Valley Power Station. Electrical Engineer and Manager, 45-53, Sunbridge-rd., Bradford.

*Dover T.C.—40 traditional houses in two groups at Buckland Valley and Green-la., Farm estate. B.E. Dep. £2 2s.

### APRIL 7.

*Newent R.D.C.—4 houses at Highleadon Green, Highleadon, Glos. H. S. Jenkinson, S., Council Offices. Dep. £2 2s.

**Worcester T.C.**—56 houses in 4 groups at Newtown No. 2 estate. City E. Dep. £5 5s.

### APRIL 8.

*Salford T.C.—Sub-station at Tully-st. City Electrical E. and Manager.

### APRIL 10.

**Cuckfield U.D.C.**—12 houses at Box's Nursery estate. John L. Denman (F.), 27, Queen's-rd., Brighton 1. Dep. £2 2s.

**Hertford R.D.C.**—4 houses at "Nutcroft," Datchworth. E. A. Williams, C., Council Offices, 20, Castle-st. Dep. £3.

### APRIL 12.

*Belper U.D.C.—6 houses at Bell Acre estate. A. Percy Taylor, A.I.A.S., M.Inst.R.A., Architect, 59, Chapel-st., Belper, Derbys. Dep. £2 2s.

*County of Lincoln (Parts of Kesteven).—Police house at Brant Broughton. C. B. Metcalfe (F.), County A., County Offices, Sleaford.

**Dorchester T.C.**—4 pairs of houses at Middle Farm site. L. Magnus Austin (F.), M.T.P.I., 28, High East-st., Dorchester.

*Eccles T.C.—(a) 28 houses at Peel Green-rd.; (b) 16 houses at Swanage-rd., Gee-la. B.E. & S. Dep. £2 2s.

*Macclesfield T.C.—28 houses at Ivy-rd. estate. Boro' A., 3, Jordangate. Dep. £2 2s.

**Rugby T.C.**—6 temporary shops with drainage and incidental works, etc. B.E. Dep. £2 2s.

**Winsford U.D.C.**—70 houses at Dene estate. P. Heaton, S., Council Offices. Dep. £10 10s.

### APRIL 13.

**Cheshire C.C.**—Completion of construction of Sale Cecil-ave. Modern Secondary School for Boys. E. M. Parkes (F.), County A., The Castle, Chester. Dep. £2 2s.

### APRIL 14.

**Barrow-in-Furness C.B.**—1 pair of cottages at Poaka Beck, Dalton-in-Furness. T.C. Dep. £1 1s.

*Harrow U.D.C.—Repairs and certain underpinning to No. 22, Gayton-rd. E. and S. Dep. £2 2s.

*Manchester T.C.—384 houses and flats at Newall Green area, Wythenshawe, in seven contracts. Housing Dept. Dep. £3 3s.

### APRIL 19.

*Beckenham T.C.—Repairs to houses at Elmers-end estate (Contract No. 6). B.E. & S. Dep. £2.

*Weymouth and Melcombe Regis T.C.—Restoration of Pavilion and Palm Court (revised). B.S. Dep. £2 2s.

### APRIL 20.

*Bournemouth C.B.—24 houses at East Way. Boro' A. (Room 51). Dep. £2 2s.

### NO DATE.

*Essex Standing Joint Committee.—Applications invited from contractors for erection of police houses in various areas. H. Conolly, County A., County Hall, Chelmsford. (Applications to be returned by April 7.)

## PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

### MARCH 31.

†*Norfolk E.C.—External renovation at King Edward VII Boys' Grammar School, King's Lynn. F. G. Limmer (F.), Ed. Architect, Stracey-rd., Norwich.

### APRIL 2.

*Leeds T.C.—External painting of large number of dwellings at various estates. H. R. Hudson (L.), Director of Works, Sweet-st.

**Redditch U.D.C.**—E. and S. (Materials).


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### APRIL 12.

**Sutton-in-Ashfield U.D.C.**—E. & S. (Materials).

### APRIL 17.

**Cannock U.D.C.**—E. & S. (Materials).

### APRIL 21.

*Harrow U.D.C.—External painting of 186 houses at Weald Village estate; external and part internal painting of 81 houses at Woodlands-dr. estate. H. W. Rackham, F.R.I.C.S., E. & S., Council Offices, Uxbridge-rd., Stanmore, Middx. Dep. £2 2s.

## ROADS, SEWERAGE AND WATER WORKS

### MARCH 29.

**Bexhill T.C.**—Surface dressing of roads. E. and S.

**Cannock U.D.C.**—Surface dressing of roads. E. and S.

### MARCH 31.

**Cossley U.D.C.**—Surface dressing of roads. E. and S. Dep. £2 2s.

**Kettering R.D.C.**—2,000 yds. of 4-in. and 250 yds. of 3-in. water mains. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £1 1s.

**Northampton R.D.C.**—Roads and sewers at Congenhoe site. S., 1, Cheyne-walk. Dep. £3 3s.

**Sevenoaks R.D.C.**—Making-up site roads at Dunton Green site. E. and S. Dep. £2 2s.

**Shepshed U.D.C.**—Roads and sewers, etc., at Sullington-rd. estate. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

### APRIL 1.

**Bridgwater T.C.**—Sewage pumping station at Hamp estate. R. A. Watson, M.I.Mun.E. (L.), B.E. Dep. £2 2s.

**Notts C.C.**—Making up various streets. County S. Dep. £5.

### APRIL 2.

**Neath T.C.**—Roads and surface drains with incidental works at Westernmoor. B.E. Dep. £3 3s.

**Sutton and Cheam T.C.**—Surface dressing of roads. B.E. and S.

### APRIL 5.

**Baildon U.D.C.**—Roads and sewers at Knoll housing estate. Fairbank & Son, M.Inst.C.E., Barclays Bank-chbrs., St. Helens-sq., York Dep. £3 3s. (payable to U.D.C.).

**Chepstow R.D.C.**—Site works at Sandy-la. site. Thomas and Morgan and Partners, 23, Gelliwastad-rd., Pontypridd. Dep. £3 3s.

**East Dean R.D.C.**—3,400 yds. of 9-in. and 7-in. dia. sewers, with manholes and sewage disposal works, at Ruardean. Lemon and Blizard, Lansdowne House, Castle-la., Southampton. Dep. £3 3s.

**Halifax C.B.**—Reconstruction of Keighley and Wheatley rds. B.E. Dep. £2 2s. each.

**Littlehampton U.D.C.**—Surface dressing of roads. J. A. Young, M.I.Mun.E., Council Offices.

**West Bromwich C.B.**—Roads and sewers at Newtown housing site. B.E. & S. Dep. £1 1s.

### APRIL 6.

**Chester T.C.**—Completion of roadworks at Blacon housing estate, section 1. City E. and S.

**Rochford R.D.C.**—Roads and sewers at Gt. Wakering. Offin and Rumsey, South-st., Rochford. Dep. £3 3s.

### APRIL 9.

**Pershore R.D.C.**—7,900 lin. yds. of 4-in. and 3-in. dia. spun-iron water mains, etc., at Defford and Besford. Wilcox, Raikes and Marshall, 33, Gt. Charles-st., Birmingham. Dep. £5 5s.

**Upper Stour Valley Main Sewerage Board.**—Extension of sewage disposal works at The Freehold, Caledonia, Quarry Bank, nr. Brierley Hill. George Plant Deeley, M.I.Mun.E., 180, High-st., Cradley Heath, Staffs. Dep. £3 3s.

**Whitehaven T.C.**—Roads and sewers at Valley housing scheme No. 1. B.E. & S. Dep. £2 2s.

### APRIL 10.

**Horsham R.D.C.**—Sewer and sewage disposal works at Faygate. S.

### APRIL 12.

**Brentford and Chiswick T.C.**—Roads and drainage works at St. Thomas' housing site Sutton Court-rd. B.E. & S. Dep. £2 2s.

**Tendring R.D.C.**—26 miles of spun-iron mains, etc. Lemon & Blizard, Castle-la., Southampton. Dep. £3 3s.

**Liverpool Corporation Waterworks.**—Construction of Prescot No. 4 reservoir and associated works at Knowsley Park. Water E., 55, Dale-st. Dep. 25 guineas.

### APRIL 14.

**Lewes T.C.**—Surface dressing of roads. B.S.

### APRIL 17.

**Willenhall U.D.C.**—Road and sewers at William Harper-rd. E. & S. Dep. £2 2s.

### APRIL 21.

**March U.D.C.**—(1) Sewers and pumping main (contract M.3); (2) sewage pumping station and storm-water tanks and sewage disposal works (contract M.4). W. H. Radford and Son, Albion-chbrs., King-st., Nottingham.

# GENERAL BUILDING WORK

## (LONDON)

**Fulham.**—TEMPORARY HOUSES.—B.C. purchasing following sites for erection of temporary houses:—19, 26 and 27, Avalon-rd.; 52, 54, Bayonne-rd.; 32, 49, Burnfoot-ave.; 13, 21, 41 and 47 to 55, Chancellor's-rd.; 6, 7, 7a, 8 and 9, Distillery-la.; 78, 80, Greyhound-rd.; 32 to 42, Pearscroft-rd.; 16, 18, Reporton-rd.; 10 to 18, Winslow-rd.

**Greenwich.**—HOUSING.—L.C.C. consent to erection of cottage houses on site at rear of Westcombe-hill and 33-43, Vanbrugh-pk.

**Hammersmith.**—GARAGE.—With living accommodation overhead, at 225, Goldhawk-rd. for Daniel Neal & Sons, Ltd., 126, Kensington High-st. Plans by Chesterton & Sons, 116, Kensington High-st., W.8.

**Hampstead.**—HOUSING.—B.C. to proceed with King Henry's-rd. housing scheme.

**Hampstead.**—FLATS.—B.C. to erect 80 flats in West End-la. Architect, E. B. Glanfield, F.R.I.B.A., 6, Raymond-bldgs., Gray's Inn, W.C.1.

**Ilford.**—SHOPS AND HOUSES.—Davis Estates, Ltd., 346-350, Kilburn High-rd., prepared layout for shops and houses. Hilbery Chaplin, Ltd., 4, Russell-parade, Hendon, have similar building scheme.

**Kensington.**—FLATS.—B.C. recommended to approve revised proposals for Portobello-st. housing scheme providing for 146 flats, subject to L.C.C. approval.

**Kingston-on-Thames.**—KITCHEN AND DINING-ROOM.—Surrey C.C. propose new kitchen and dining-room at Latchmere-rd. County Primary school at £6,443.

**St. Pancras.**—MAINTENANCE.—B.C. to carry out external maintenance works at Ferdinand-place estate, Somers Town estate, Goldington-bldgs. and Montague Tibbles House at £7,000.

**Stratford.**—REBUILDING.—Plans for rebuilding Curtis Memorial Hall at rear of Highway Hall, Romford-rd., for Building Committee. Architects, Higgins & Thomerson, 76, Finsbury-pavement, E.C.2.

**Surbiton.**—FACTORY.—At Roebuck-rd., for Partridge Transformers, Ltd., 76, Petty France, S.W.1. Plans by George Coles, F.R.I.B.A., 40, Craven-st., W.C.2.

**Surbiton.** — CREMATORIUM. — Development of Glanmire Farm as crematorium and garden of rest. Plans by H. M. Grellier & Son, Palace-chbrs., Bridge-st., S.W.1.

**Wandsworth.**—FLATS.—A. Beasley, A.R.I.B.A., Municipal Buildings, High-st., prepared plans for 126 three-storey flats on 15 sites. Quantities by McConville & Fraser, 121, Kingsway, W.C.2.

**Wandsworth.** — PUBLIC-HOUSE.—Proposed rebuilding of Prince of Wales public-house at Balham New-rd. Plans by Nowell Parr & Son, 97, Old Brompton-rd., S.W.7.

**Wandsworth.**—HOUSES.—John Lewis (Building), Ltd., 13-17, Alperton-la., Greenford, to erect 25 brick-built houses for B.C. as follows:—18-20, Priests-bridge (2); 27-30, Dighton-rd. (2); 21-33, Aldis-st. (4); 200-210, Franciscan-rd., and 105-111, Eswyn-rd. (5); 129-147, Eswyn-rd. (6); 92-94, Sunnyhill-rd. (2); 95-97, Sunnyhill-rd. (2); 109-111, Babington-rd. (2).

**Wandsworth.**—HOUSING.—B.C. to purchase following sites for erection of factory-made houses:—8, Atney-rd.; 62, Bassingham-rd.; 44, Chelverton-rd.; 7, Daysbrook-rd.; 204, and 206, Earlsfield-rd.; 4, Hopton-rd.; 13, Madeira-rd.; 7, Oakdale-rd.; 29, Oakhill-rd.; 67, Park-hill; 76, Summerley-st. and land adjoining.

**Westminster.**—REPAIRS.—To Royal Albert Hall. Plans by H. R. Steele, F.R.I.B.A., 14, Gray's Inn-sq., W.C.1.

## (PROVINCIAL)

**Bakewell.**—U.D.C. propose shops at Haddon-rd. site.

**Bath.**—E.C. propose erection of West Twerton Secondary Modern school. Plans by Mowbray, Green & Hollier, 27, Queen-sq., Bath.

**Belper.**—R.D.C. propose houses at Smalley, Oakerthorpe and Kirk Langley.

**Blackburn.**—Scapa Dyers, Ltd., Witton, propose new works off Preston Old-rd.—T.C. propose 100 "Orlit" houses at Higher Croft estate at £152,568.—R.D.C. propose "Airey" houses at Mellor, Billington and Ramsgreave.

**Blackpool.**—T.C. approved omnibus garage and station at Bloomfield-rd. for Yelloway Motor Services, Ltd. Halstead Best (F.), Architect, 20, Clifton-st.

**Bollington.**—Ches. E.C. propose dining-room and kitchen at Bollington Cross school.

**Bolton.** — T.C. approved: — Extensions to Snowfecta Works, Back Blackburn-rd., for Jas. Kenyon.

**Brighouse.**—T.C. approved:—Structural alterations and extensions at Travellers' Inn, Hipperholme, for S. Webster & Sons, Ltd., brewers, 57, Northgate-st., Halifax.

**Camberley.**—The War Department proposes to acquire 1,430 acres of land adjacent to Royal Military Academy and Staff College for erection of married quarters and provision of training ground.

**Chester.**—T.C. approved:—Printing works at Crippen-st. for R. Boot, 22, Newgate-st.; motor showrooms, 22 flats at Watergate-st., for George Taylor (Chester), Ltd. (P. H. Lawson, architect, 2, Pepper-st.); ice cream factory, Commonhall-st., for J. Franks.

**Chesterfield.**—R.D.C. propose developing 10 acres of land at Cow-la., Brimington, and 4 acres at Lightwood-la., Marsh-la., Eckington, for housing estates.—M.O.W. propose 50 brick houses for miners and displaced persons.

**Colchester.**—T.C. considering question of carrying out repairs, etc., at King Edward Quay at £90,000.

**Coventry.**—Licensing Justices approved "The Postillion" hotel, Coventry-London-rd. and Oxford-rd., for Mitchells & Butlers, Ltd., Cape Hill Brewery, Smethwick, Birmingham.

**Coventry.**—Provision of laboratory and maternity centre for Coventry Family Health Club Housing Society. Plans by Rolf Hellberg (F.), 13, Queen Victoria-rd., Coventry.

**Dudley.**—T.C. propose 486 houses, 230 flats, 166 garages, and 13 shops at Old Park Farm estate. Derek L. Bridgewater (F.), 42, Burton-pl., Berkeley-sq., W.1.

**Durham.**—C.C. to set up branch libraries at Blackhall Colliery, Murton, Wingate, Shildon, Wheatley Hill-Thornley, and Barnard Castle.

**Eccleshall.**—Staffs E.C. propose adaptation of Walton Hall for special residential school for handicapped children.

**Egham.**—Surrey C.C. propose kitchen and dining-room at Strode's Boys' school at £6,625.

**Ellesmere Port.**—U.D.C. approved additions to works for Metal Containers, Ltd.

**Folkestone.**—T.C. has approved site for Primary schools at Warren-rd. for Kent E.C.

**Hull.**—E.C. propose to erect Francis Askew Infants' and Junior school, and Inglemire Girls' Secondary school. Andrew Rankine (F.), City A., Guildhall, Hull. (Est. costs, £117,156 and £200,000, respectively.)

**Keighley.**—T.C. approved:—Offices at Aireworth Mill for Robinson & Nowell; extensions at Trico Works, Lawkholme-la., for Rustless Iron Co., Ltd.

**Liverpool.**—Rev. J. McCarthy, P.P. St. Christopher's, Stapleton-ave., Speke, proposes Primary school and nursery class. J. C. Prestwich & Sons (F.), architects, Bradshawgate-chbrs., Leigh.

**Luton.**—E.C. considering plans for extension of Technical College at £110,000. S. C. Jury, architect, Shire Hall, Bedford.

**Manchester.**—T.C. approved:—Additions and alterations at works, Chatham-st., Clayton, for Clayton Aniline Co., Ltd.; additions and alterations to factory, Vaughan-st., Ardwick, for the Vaughan Crane Co., Ltd.; 93 flats, St. George's Park, Chester-rd., Hulme, for Housing Committee; additions to factory, Central Mills, Chapel-la., Blackley, for Wallpaper Manufacturers, Ltd.; additions to Hendham-vale works, for Small & Parkes, Ltd. (H. S. Fairhurst & Sons (FF.), architects, Chancery-chbrs., 55, Brown-st.); additions to factory, New Bank-st., Ardwick, Hindle, Smart & Co., Ltd. (W. Johnson & Sons, architects, 27, Oldham-rd., Miles Platting).

**Mansfield.**—T.C. approved:—Additions to works at Hareholme-st. for J. Domelow & Sons, Ltd.; additions to works, Dame Flagon-st., for W. H. Barker & Co. (Mansfield), Ltd.—T.C. propose 100 "Orlit" houses at junction of Westfield-la. and Abbott-rd.

**Market Drayton.**—Ministry of National Insurance propose offices at South Ring, Stafford-st.

**Middleton.**—T.C. approved:—Rebuilding works at Mason's Arms hotel, Market-pl., for Wilson's Brewery Co., Ltd., Monsall-rd. Brewery, Newton Heath, Manchester 10.

**Newcastle.**—Adaptations and improvements to be made to wards at General Hospital. Plans by J. Cook, City Property S., Town Hall.

**Newcastle.**—Extensions are to be made to wards at Royal Infirmary. Plans by Curtis Green, Son & Lloyd, 5, Pickering-pl., St. James-st., London.

**Newcastle.**—Kingtons, Ltd., Shields-rd., tea merchants, etc., to erect canteen, offices and sanitary accommodation. Plans by L. J. Couves & Partners, Carliol House, Newcastle.

**Northumberland.**—C.E.C. propose kitchens and dining-rooms at schools at Morpeth, Tynemouth and Newbiggin.

**Nottingham.**—Omnibus garage proposed at Bilborough for Transport Committee. Plans by R. M. Finch, M.I.C.E., City E., Guildhall, Nottingham. (Est. cost £67,350.)

**Nottingham.**—M.O.H. propose erection of 250 miners' bungalows at Bilborough. Plans by C. A. Pilkington (L.), Corporation Architect.

**Oxford.**—City Council approved plans for new stores block and alterations to works canteen at rear of works, 145, Botley-rd., for City Motor Co. (Oxford), Ltd.

**Reading.**—E.C. propose Technical College. Plans by Lanchester & Lodge (FF.), 10, Woburn-sq., W.C.1. (Est. cost first stage, £392,500.)

**Reading.**—C. H. A. Willett (L.), Town Hall, Reading, prepared plans for Mid-South Secondary School for Boys.

**Salford.**—T.C. approved:—Canteen and restaurant at Regent-rd. Brewery, for Groves & Whitnalls, Ltd.—T.C. propose 1,941 houses on sites at Little Hulton for neighbourhood Units Nos. 1, 2 and 6.—E.C. propose Technical High school at Leaf-sq., Pendleton.

**Sowerby Bridge.**—West Riding C.C. propose County College.

**Stockport.**—T.C. approved:—Additions to works at Harefield-st. for L. Higginbotham & Co., Ltd.; extensions to factory, Hopes Carr, for W. Moss & Sons.

**Stone.**—Licensing Justices approved hotel at Church-st. for John Joule & Son, Ltd., The Brewery, Stone.

**Stretford.**—T.C. approved:—Nursery school at Cromwell-rd. for Lancs E.C.; extensions to works, Fraser-rd., for Sterling Varnish Co., Ltd.

**Todmorden.**—West Riding C.C. propose County College.

**West Bromwich.**—T.C. approved factory at Greets Green-rd. for Copper & Alloys, Ltd.—Aluminium Products, Ltd., Haines-st., propose extensions to works. J. H. Lewis, architect, 113, Edmund-st., Birmingham 3.

**West Hartlepool.**—Montague Burton, Ltd., Hudson-rd. Mills, Leeds, to rebuild premises at Lynn-st. Plans by firm's staff architect.

**Wigan.**—E.C. propose extensions at Pemberton Modern school at £7,200.—E.C. propose 3 County Colleges.

**Workington.**—T.C. approved extensions to works and works canteen at Factory, Northside, for Lambskin Refining Co., Ltd. and West Cumberland Industrial Development Council, 30, Roper-st., Whitehaven.


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## TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

**Amesbury.**—12 Airey houses at Figheldean, for R.D.C.: *Sims Bros., Durrington, £15,717.

**Barnsley.**—Pithead baths at Dearne Valley Colliery, Little Houghton, for Miners' Welfare Commission: *T. Jenkinson & Sons (Doncaster), Ltd., Bentley-rd., Doncaster (estimated cost, £42,000).

**Bebington.**—Extensions at Maternity Block, Clatterbridge General Hospital, for Ches. C.C. E. M. Parkes (F.), C.A., The Castle, Chester: *Cartwright Bros. (Little Sutton), Ltd., Dudleston-rd., Hooton, nr. Birkenhead, £9,249.

**Blackpool.**—22 houses, land, roads and sewers at Edgway-rd., for T.C. A. Hamilton, B.S.: *A. Ashworth, 22, Longridge-av., Blackpool, £31,472.

**Blackrod.**—14 additional houses at housing estate, for U.D.C. Bradshaw Gass & Hope (FF.), 19, Silverwell-st., Bolton: *Stanley Porter, Ltd., Crofter's Saw Mills, Bolton, £18,600.

**Bournemouth.** — Reinstatement of war damage to Russel Cotes Art Gallery and Museum, for Corporation. W. J. Dacombe & Sons, architects, Lloyds Bank-chbrs., Boscombe, Bournemouth: *J. Carter & Sons, 18, West-rd., Boscombe, Bournemouth.

**Bristol.**—Conversion of 35 Cotham Park, into hostel, for G.W.R. Company's Chief Architect, F. F. Curtis (A.), 121, Westbourne-ter., W.2: *Stone & Co. (Bristol), Ltd., 140, Redland-rd., Bristol 6.

**Bromsgrove.**—34 houses at Woodrow-la., Aston Fields, etc., for U.D.C. F. W. Goodman, S. (20): *J. & A. Brazier, Ltd., Worcester-st.; (10) *Shipway & Partners, Northfield, Birmingham; (4): *Bowes Building Co., Kidderminster-rd. (rest of Bromsgrove).

**Brynmawr.**—Works for Enfield Cables, Ltd., Brimsdown, Enfield, Middx. Plans by Company's staff: *Holland & Hannen and Cubitts, Ltd., 1, Queen Anne's-gate, S.W.1.

**Cardiff.**—Primary school at Rumney. A. Steele (A.) and E. C. Roberts, A.M.I.C.E., City E., City Hall, Cardiff: *J. North & Sons, Plasnewydd, Rumney, £14,331.

**Cardiff.**—Temporary Primary school at Fairwater. A Steele (A.) and E. C. Roberts, A.M.I.C.E., City E., City Hall, Cardiff: *R. B. Fear, Oaklands, Western-av., Cardiff, £15,111.

**Cardiff.**—Temporary Primary school at Caerau. A. Steele (A.) and E. C. Roberts, A.M.I.C.E., City E., City Hall, Cardiff: *R. B. Fear, Oaklands, Western-av., Cardiff.

**Carlow.**—44 houses and site works at Pollerton-rd. site, for U.D.C.: *D. & J. Carbery, Ltd., College-st., Carlow, £66,000.

**Chiswick.**—Rebuilding of block of four houses at Wolsey-gdns., W. A. S. Knott & Edna Moseley (AA.), 80, Edith-gr., S.W.10: *Bury Building Co., Ltd., "Dell," Reservoir-rd., Ruislip, Middx.

**Church Stretton.**—Six houses and roads and sewers at Central-av., for U.D.C.: *W. A. Sherratt, Beaumont-rd., Church Stretton, £12,660.

**Clacton.**—Renovations and alterations at Passmore Edwards Convalescent Home, for Essex C.C.: *Fraser Wallis, 73a, Station-rd., Clacton, £11,500 (subject to M.H. approval).

**Clapham Common.**—Extension of factory, Chase Works, The Chase, for Branson and Co., Ltd. H. Wakeford & Sons, architects, 184, Clapham-rd., S.W.4: *J. Garrett & Sons, Ltd., 63, Balham-hill, S.W.12.

**Derby.**—Two temporary classroom blocks at Roe Farm school, for C.B. Thos. W. East (F.), Boro' A: *Holmes & Son, Ltd., 815, London-rd., Derby, £2,565.

**East Ham.**—Extension of St. Bonaventure's Grammar school, St. Anthony's-rd. Hudson & Hammond (AA.), 32, Sudbury-dr., Harrow, Middx: *George Parker & Son, Ltd., 124, Sumner-rd., S.E.15.

**Friern Barnet.**—Further 10 houses at No. 5 housing site, Colney Hatch, for U.D.C.: *V. A. Howard, Ltd., 128, Colney Hatch-la., N.10.

**Gt. Yarmouth.**—Kitchen and dining-hall at "North Denes" Primary school, for E.C. H. F. Dyson, M.B.E., M.I.Mun.E., B.E. Quantities by Phillip Pank, Norwich: *Castons, Ltd., Thunder-la., Thorpe-next-Norwich, £3,890.

**Harlesden.**—Proposed extension to Ace Service Station (London), Ltd., North Circular-rd. S. A. S. Yeo (A.), 3, Chesham House, Willesden Green Station, N.W.2: *Sir Robert MacAlpine & Sons, Ltd., 80, Park-la., W.1.

**Hoole.**—Conversion of "Hoole House" into 13 flats, for U.D.C.: *W. Browne & Son (Chester), Ltd., Castle-st., Chester, £10,580 (subject to M.H. approval).

**Kiveton Park.**—20 bungalows for aged at Harthill and 16 houses at Brick-la., Dinnington, for R.D.C. W. M. Gibson, S. (20): *H. A. Warren, The Haven, Worksop-rd., Aston Common, nr. Sheffield, £14,780; (16): *V. Lerigo, Arcot House, North Anston, Dinnington, nr. Rotherham, £18,800.

**Landore.**—Hostel for G.W.R. G. W.R.'s Chief Architect, F. F. Curtis (A.), 121, Westbourne-ter., W.2: *C. A. Hayes & Sons, Ltd., Stork House, Hotwell-rd., Bristol 8.

**Liverpool.**—Central school kitchens at Pye-st. and Waterloo-st. schools, for E.C. Sir L. H. Keay (F.), C.A., Blackburn-chbrs., Dale-st., Kingsway: *Norwest Construction Co., Ltd., Ruthven-rd., Litherland, Liverpool 13.

**L.C.C.**—Contracts exceeding £2,500 in value, placed by L.C.C. during period ended March 3: Provision of electrical installation at Peterborough school, Fulham. Holliday & Son (Electrical), Ltd., Westminster.

**¶London (Air Ministry).**—New contracts to value of £500 or over for week ended March 13:—Painting work: Fields, Ltd., Reading. Demolition work: Farrans, Ltd., Dunmurry, Belfast.

**¶London (M.O.W.).**—Contracts placed by M.O.W. for week ended March 11:—

*London*: Post Office Depot, Cornwallis-rd., Holloway, N., extension of battery shop, etc., John Willmott & Sons (Hornsey), Ltd., 40, Tottenham-la., N.8; St. James' Palace, West Block, S.W.1, electric light and power, telephone and bell installations, T. Clarke & Co., Ltd., 129, Sloane-st., London, S.W.1; St. James' Palace, West Block, S.W.1, supply, delivery, erection and testing of one electric passenger lift, Waygood Otis, Ltd., Falmouth-rd., London, S.E.1. *Beds*: Dunstable, erection and completion of television relay station, W. Summerfield & Son, 140, High-st. South, Dunstable. *Berks*: A.E.R.E., Harwell, supply, delivery, erection and testing of 3 complete water-cooling installations, F. Church, Canterbury Works, Glanville-rd., Oxford. *Berwickshire*: Eyemouth, coastguard houses, R. Douglas, "Northumbria," Eyemouth, Berwick. *Cambs*: Littleport C.P. Town School, classrooms and scullery, R. Edwards & Son, Staples-la., Soham, Cambs; Cambs and Ely Girls' School, Broad-st., Cambs, erection of 2 classrooms, plus 2-bay scullery, R. Edwards & Son, Staples-la., Soham, Cambs. *Essex*: Buckhurst Hill, erection of local office building for M.N.I., Charles S. Foster & Sons, Smarts-la., Loughton, Essex. *Herefordshire*: Ilmington-rd. School, Weobley Castle, temporary buildings, W. B. & F. T. Archer, Holyhead Works, Rookery-rd., Handsworth, Birmingham. *Kent*: Ministry of Supply, Fort Halstead, fabric reinstatement, Rom River Co., Ltd., 3, Woburn-pl., W.C.1. *Lanarkshire*: St. Bonaventure's Elementary School, Glasgow, temporary classrooms, Brown Fraser & Co., Ltd., 24, Durward-ave., Glasgow, S.1; Central School, Wishaw, temporary classrooms, McLean & Co., 73, Glasgow-rd., Wishaw; Central School, Wishaw, scullery and dining-room, McLean & Co., 73, Glasgow-rd., Wishaw; Waterloo-st. Parcel Post Office, Glasgow, renewal of lifts, Wm. Binnie & Sons, 38, Blenheim-st., Glasgow. *Lancs*: Miners' Hostel, Accrington, adaptations for Ministry of Labour, J. H. Naylor & Sons, Ltd., Celia-st., Burnley; Fishwick County Secondary School, Preston, hutted accommodation, T. Croft & Sons, Ltd., Home Slack Works, Blackpool-rd., Preston; Wythenshawe, Manchester, erection of M.N.I., Pochins (Contractors), Ltd., King-st. Works, Middlewich; Grasmere-st., Leigh, erection of M.N.I., J. R. Ashall, Ltd., Greenway, Manchester-rd., Warrington; Royal Artillery Z.H.S. Camp, Hazelbottom-rd., Crumpsall, Manchester, alterations for Ministry of Labour hostel, Moston Bridge & Building Co., Ltd., Kenyon-la., Moston, Manchester.

*Lincs*: The County School, High-st., Epworth, temporary buildings, John Spafford & Co., 2, Gilliatt-st., Scunthorpe, Lincs; M.N.I., Spital Gate House, Grantham, adaptation of premises and erection of standard hutting, E. Eatch & Sons, 22, Bridge End-rd., Grantham, Lincs; Ministry of Agriculture and Fisheries Hostel, Keadby South Camp, Scunthorpe, alterations and additions, F. J. Brown, Ltd., 136, Doncaster-rd., Scunthorpe, Lincs. *Middlx.*: Cranford-la., Heston, foundation and site works for permanent aluminium houses, Lavender, McMillan, Ltd., 54, Cheam Common-rd., Worcester Park, Surrey. *Middlx.*: M.N.I., 581a-587, Green-la., Harringay, occupational services, Higgs & Hill, Ltd., Crown Works, South Lambeth-rd., London, S.W.8. *Orkney*: North Walls Public School, kitchen and dining-room, Orkney Builders, Ltd., Gt. Western-rd., Kirkwall, Orkney. *Perthshire*: Bridge of Earn Hospital, domestic hot water services and radiators in corridors, Units II and III, H. Twaddle & Son, Ltd., 130, London-rd., Glasgow, C.1. *Staffs*: Broadmeadow County Modern School, Chesterton, Newcastle/Lyme, temporary buildings, G. & J. Sedden, Ltd., 55, Duke-st., Fenton, Stoke-on-Trent, Staffs. *Stirlingshire*: Killearn Hospital, electric mains, Jas. Scott & Co., Ltd., 305, St. Vincent-st., Glasgow. *Worcs*: All Saints' Emergency Hospital, Bromsgrove, conversions into general hospital and hospital for chronic sick, Higgs & Hill, Ltd., Roslyn-chbrs., Warwick-rd., Coventry. *Yorks*: National Coal Board, Wentworth Camp, Harley, Sheffield, alterations, adaptations and decorations for miners' hostel, Hadden Bros., Ltd., 40, Spring-st., Sheffield; Northallerton, extensions to head post office and telephone exchange, D. Oakley, Ltd., Romanby-rd., Northallerton, Yorks; Dalby Farm, nr. Thornton Dale, traditional type houses for Forestry Commission, A. Moore & Son, Spring Hill-rd., Scarborough.

**¶London (War Dept.).**—Works contracts placed by War Dept. for week ended March 6:—*Notts*: Building work, George Harrison, Nottingham; Electrical work, Electra (Birmingham, 1936), Ltd., Birmingham. *Flint*: Building work, Sefton Building Co., Ltd., Liverpool. *Kent*: Painting work, J. J. Hamilton, Cowley, Oxford.

**London.**—Reinstatement at 8-12, Aldersgate-st., for Williams (Bread-st.), Ltd., 81, Bridge-st., Pinner, Herts. V. Wilkins (F.), 12, York-bldgs., Adelphi, W.C.2: *Hall, Beddall & Co., Ltd., Pitfield Wharf, Waterloo Bridge, S.E.1.

**London.**—War damage repairs to factory at 72, Chase-rd., N.W., for Dulcet Confectionery Co., Ltd. Robert Sharp (F.), 13, Lower Belgrave-st., S.W.1: *A. T. Rowley (London), Ltd., Cambridge Works, Lordship-la., N.17.

**Malvern Wells.**—Conversion into sanatorium for tuberculosis of Brickbarns Hospital, for Warwickshire & Coventry Joint Committee for Tuberculosis. S. N. Cooke & Partners, Architects, Sun-bldgs., Bennets Hill, Birmingham: *Wilson Lovatt & Sons, Ltd., Clarence-st., Wolverhampton.

**Manchester.**—Dining-rooms and kitchens at Aspinall-st., Gorton Primary school, Central schools, Didsbury, and Beaver-rd. Primary schools, Didsbury, for E.C. L. C. Howitt (F.), City A.: *W. Brittain & Sons, Ltd., Francis-av., Chadwick-rd., Eccles.

**Manchester.**—Grocery stores and flat at Clowes-st. and Norton-st., Gorton, for Hunters The Teamen, Ltd., Hyde-rd. stores, Ardwick. A. E. McCutcheon, architect, 1180a, Chester-rd., Stretford: *H. Isherwood, 127, Raby-st., Moss Side, Manchester 14.

**Nant Conway.**—14 Airey houses at Dolwyddelan, for R.D.C. E. E. Roberts, S.: *John Wright (Chester), Ltd., Chester, £19,757.

**Newcastle-on-Tyne.**—Additional houses for City Council. G. Kenyon, City A., 18, Clothmarket. (4): *Hutton & Glynn, Hartington-st., Newcastle; (12) *W. H. Oliver, West-rd., Newcastle; (16) *R. S. Appleby & Co., Ltd., Clayton-st., Newcastle; (16): *W. Leech, Ltd., Clayton-st., Newcastle; (16): *R. Bowey & Son, Back Raby-st., Newcastle; (12); *Bourn & Saxon, Gerald-st., Benwell, Newcastle; (6): *Rochester & Kirk, Ltd., Lanercost-drive, Fenham, Newcastle; (6): *Cunningham & Forster, 104, Kenton-la., Newcastle; (12): *Wilkinson Bros., Patterdale-gdns., High Heaton, Newcastle.

**Oldham.**—Offices, showroom and stores at Crossbank-st.: *Lees Bros., Ltd., 38, Pitt-st., Oldham.

**Rushden.**—Two groups of 10 and 14 houses at Higham-rd. estate, for U.D.C. L. E. Johnson, E. & S.: *F. & R. Windsor, Rushden (1 block, 4 houses), £5,203; *A. Sanders, Ltd., Rushden (1 block, 6 houses), £7,722; *R. Marriott, Ltd., Rushden (1 block, 6 houses), £7,722 (2 blocks, 4 houses), £10,456.

**Salford.**—Works for T.C. W. Albert Walker (G.M.), City E. Additional works at Agecroft Generating Station: *M. J. Gleeson, Ltd., London-rd., North Cheam, Surrey, £15,543.

**Sandwich.**—Eight houses at Sandwich estate, for T.C.: *Frank E. Wood, £9,600 (approved by M.H.).

**Scottish Special Housing Association, Ltd.**—Contracts placed from January 15 to February 10:—Cadder-rd., Glasgow (110 Weir "Quality" houses). Val-de-Travers Asphalte Paving Co., Ltd., Asphalte surfacing. Bauchenbush, Kirkcaldy (300 Weir "Quality" houses for transferred miners), Farran, Ltd., Milfort-av., Dunmurry, Belfast, Site servicing. Garthdee West, Aberdeen (154 Whitson-Fairhurst 176 Orlit), Electricity Department, Aberdeen Corporation, A.C., E.L. Service Cables. Toryglen (1st development), Glasgow (196 Weir "Quality" houses), Braithwaite & Co., Engineers, Ltd., The Moorings, Church-rd., Great Bookham, Surrey, Supply and erection of steel water tank and tower. Strathconon, Ross-shire (6 Foresters' houses), Morrison Bros., Windhill, Beauly, Mason brick; Boyne & Martin Plumber, 61, High-st., Nairn. Plumber; Morrison Bros., Windhill, Beauly, Slater, joiner and plasterer; R. A. Robertson, 20, Lombard-st., Inverness, Electrical; The Highland Glazing Co., 32a, Waterloo-pl., Inverness, Glazier. Dalneigh, Inverness (126 Traditional), Carron Co., Falkirk, Fireplaces. Belmont-rd., Ayr (200 Traditional), Wm. Govan & Sons, Ltd., Harbour-st., Ayr.

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**Silvertown.**—Rebuilding of Premier Flour Mills, Victoria Docks, for Joseph Rank, Ltd., 107, Leadenhall-st., E.C.3. Sir Thomas P. Bennett & Son, architects, 43, Bloomsbury-sq., W.C.1. Building: *Sir Robert McAlpine & Sons (London), Ltd., 80, Pall Mall, S.W.1; steelwork: *Matthew T. Shaw & Co., Ltd., West Ferry-rd., Millwall, E.14.

**South Kesteven.**—Four Airey houses at West Deeping, for R.D.C.: *L. P. Longland, Langtoft, £7,240.

**South Shields.**—Adaptations to premises at East Garth, for the Ministry of National Insurance: *M. Swales, Imeary-st., South Shields.

**Southwark.**—Rebuilding of paper printing works, for Metal Box Co., Ltd., The Langham, Portland-pl., W. S. N. Cooke & Partners, architects, Sun-bldgs., Bennets Hill, Birmingham: *Higgs & Hill, Ltd., South Lambeth-rd., S.E.

**Sunderland.**—Additional houses for T.C. (6): *C. Harrison, Sunderland; (12) *J. Prentice, Sunderland; (54): *J. W. White, Sunderland; (six): *E. Seymour, Sunderland.

**Wandsworth.**—Conversion of gas decontamination centre at rear of 23, Weir-rd., Balham, for day nursery, for B.C.: ‡H. V. Coward & Co., £7,300 (subject to M.H. approval).

**West Ham.**—First section of proposed Trade School for Girls, Romford-rd., E., for E.C. Thomas E. North (F.), Boro' A., 100, West Ham-la., E.15: *Boyd Gibbins, 285, Romford-rd., Forest Gate, E.7, £78,169.

**Wigan.**—Extensions at St. Patrick's school, Hardybutts, for Rev. Joseph Murray, P.P., St. Patrick's R.C. Church: *D. A. Ablett & Sons (1938), Ltd., Sovereign-rd. Saw Mills, Wigan.

**Willesden.**—Extension of works at 78-78a, Salisbury-rd., for Aron Electricity Meters, Ltd. Thomas & Thomas, architects, 221, Edgware-rd., W.2: *Buckingham & Sons, Ltd., 45, Vivian-av., N.W.4.

**Wood Green.**—24 flats at Palmerston-rd., for B.C. Vine & Vine (AA.), Tudor-chbrs., Station-rd., Wood Green, N.22: *H. Parfitt & Son, Ltd., Harrow-rd., Wembley, £30,578.


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